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BULLETIN OF THE HISTORY OF MEDICINE

ORGAN OF
THE AMERICAN ASSOCIATION FOR THE HISTORY OF MEDICINE
AND OF
THE JOHNS HOPKINS INSTITUTE OF THE HISTORY OF MEDICINE

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Founded by HENRY E. SIGERIST

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JANUARY-FEBRUARY

NUMBER 1

JOSEPH M. TONER (1825-1896) AS A MEDICAL HISTORIAN *

WHITFIELD J. BELL, JR.

Medical historiography in America has a long tradition. As early as 1769 Peter Middleton of New York, in an introductory lecture, presented a long, discursive account of the development of medicine from ancient times to his own day; and 35 years later, drawing on the experience of half a century, Benjamin Rush recalled for his students the conditions of medical practice in Philadelphia when he was an apprentice in 1760. Growing national consciousness and pride, expressed during the semi-centennial of American independence, doubtless provided strong motives to investigate the history of medicine, as they did the history of other aspects of American life. In 1828 James Thacher of Plymouth, Mass., who had already published the journal of his experiences as a surgeon in the Revolutionary War, compiled an *American Medical Biography*. John B. Beck of Albany wrote a short history of medicine in the colonies for the New York State Medical Society, which was expanded and published in 1850. There were local histories, too, like Ebenezer Allen's on the medical profession of Norfolk County, Massachusetts; while occasionally, on some anniversary, an elderly

* Presidential address delivered at the 45th annual meeting of the American Association for the History of Medicine, Montreal, Canada, May 5, 1972.

practitioner might describe men and events of bygone days, as Jeremiah Spofford did every ten years between 1840 and 1870 to the Essex North District Medical Society in Massachusetts. Samuel D. Gross' scholarly *Lives of Eminent American Physicians and Surgeons of the Nineteenth Century*, published in 1861, rounded out the century that opened with the founding of the first American medical school in 1765.¹

The quarter century after 1865 witnessed both a notable increase in the amount of historical writing about American medicine, and also a striking improvement in its quality, for authors now chose broader themes and employed printed and manuscript sources more assiduously than their predecessors. Joseph Carson's *History of the Medical Department of the University of Pennsylvania* appeared in 1866. Oliver Wendell Holmes' Massachusetts Historical Society lecture on "The Medical Profession in Massachusetts" was delivered in 1869 (although he had employed history to good advantage 25 years before in "Homeopathy and its Kindred Delusions").² Permanently useful one-volume histories of medicine in New Jersey by Stephen W. Wickes appeared in 1879;³ in Massachusetts by Samuel A. Green in 1881; in Baltimore by John R. Quinan in 1884; in early Philadelphia by George W. Norris in 1886. A biography of John Warren was published in 1873. From the list of its medical graduates which Edinburgh University published in 1867, Samuel Lewis of Philadelphia, himself an Edinburgh graduate, compiled in 1888 the names of American students.⁴

¹ W.B. McDaniel, 2d, "The beginnings of American medical historiography," *Bull. Hist. Med.*, 1952, 26: 45-53; Whitfield J. Bell, Jr., "Lives in medicine: the biographical dictionaries of Thacher, Williams, and Gross," *ibid.*, 1968, 42: 101-20; Benjamin Rush, "An inquiry into the comparative state of medicine, in Philadelphia, between the years 1760 and 1766, and the year 1805," *Medical Inquiries* (2nd ed., Philadelphia, 1805), IV, 365-405; John B. Beck, *An Historical Sketch of the State of Medicine in the American Colonies* (Albany, N. Y., 1850, reprinted with foreword by Charles F. Fishback, Albuquerque, N. M., 1966); Ebenezer Alden, "Early history of the medical profession in Norfolk Co.," *Boston Med. & Surg. J.*, 1853, 49: 149-56, 173-79, 199-205, 215-20, 237-40, and separately; Jeremiah Spofford to Toner, Jan. 1, 1875, Toner Papers, No. 91 (Manuscript Division, Library of Congress). Spofford, who was well into his 80s when he wrote Toner, remembered Edward Holyoke, John Warren, William Eustis, James Thacher, and others of the Revolutionary generation.

² Holmes' lectures on homeopathy, 1842, and on medicine in Massachusetts, 1869, may be found in his *Medical Essays*, in the Riverside edition of his collected *Writings*, IX. See also his "Additional Memoranda" to Samuel A. Green's chapter on "Medicine in Boston" in Justin Winsor, ed., *Memorial History of Boston* (Boston, 1883), IV, 549-70.

³ In 1875 Wickes edited and published *Minutes and Proceedings of the New Jersey Medical Society, 1776-1800*; the remaining minutes to 1858 appeared in 1881.

⁴ Samuel Lewis, "List of the American graduates in medicine in the University

One of those who encouraged, and in his career illustrated, this quickening interest in medical history was Joseph Meredith Toner, a practicing physician of Washington, D. C., a leader in the profession who became president of both the American Medical Association and the American Public Health Association, a scholarly man with a taste for literary and antiquarian pursuits. As the author of historical monographs, the collector of a large library, and the promoter of commemorative events, he made important contributions to the history of medicine in the generation preceding that dominated by Mitchell and Osler.⁵

Born in Pittsburgh in 1825 of an Irish Catholic family settled in Pennsylvania for several generations, Toner grew up on a farm, was apprenticed at 17 to a carriage-builder and wagon-maker, attended the Western University of Pennsylvania for a year and Mount St. Mary's College at Emmitsburg, Md., for two. He tried several jobs—bought and operated a canal boat, clerked in a store—but finally in 1847, at the age of 22, began to study medicine with Dr. John Lowman of Johnstown, Pa. During the winter of 1849-50 he and Lowman attended classes at Jefferson Medical College in Philadelphia. In his diary young Toner noted that Robley Dunglison lectured a whole hour "without ever stopping to take breath," that Charles D. Meigs one morning delivered "a flaming lecture on dynamics of labor" which "had the whole class in roars of laughter several times," and that a patient who had been operated under "chloria eather" for removal of a tumor from his thigh, announced on regaining consciousness that "he had just been having the pleasantest dream that ever he had in his life."⁶ When the Jefferson term closed, Toner went to Woodstock, Vt., where three months later, in June 1850, he received an M. D. degree from the Vermont College of Medicine, presenting a thesis on the surgical method of arresting hemorrhage. For a time Toner practiced at Summit, Pa., a village of 200-300 on the Allegheny Portage Railroad; but in the winter of 1852-53

of Edinburgh," *New England Historical and Genealogical Register*, 1888, 42: 159-65.

⁵ The principal biographical sketches are by Ainsworth R. Spofford in *Philosophical Society of Washington, Bulletin*, 1895-99, 13: 426-30, and in Smithsonian Institution, *Annual Report, 1896* (Washington, 1898), 637-43; by Thomas Antisell in Toner, *Address before the Rocky Mountain Medical Association, June 6, 1877* (Washington, 1877), 388-405; by Martin F. Morris, "Memorial of Joseph Meredith Toner," *Columbia Historical Society, Records*, 1897, 1: 177-84; and memorial addresses in *Medical Society of the District of Columbia, Transactions*, n. s., 1897, 1: 135-58.

⁶ Toner, *Diary*, Jan. 4, 30, 1850, Toner Papers, No. 60.

he returned to Jefferson, where he received a second doctor's degree in 1853.

For the next two years Toner practiced, first at Pittsburgh, then at Harper's Ferry, Va. Neither place was congenial. He thought of settling in Louisville, Ky., where he was assured the large Roman Catholic population offered the prospect of good practice and income; he offered his services to the Russian minister as a military surgeon in the Crimea; and he was eager to serve in the severe yellow fever epidemic in Norfolk, Va., in 1855. Finally, in the fall of that year, he moved to Washington, and there he remained for the rest of his life.⁷

In Washington Toner quickly associated himself with the Catholic community, joined in founding Catholic hospitals and orphanages, which he then served as attending physician. Though unmarried—there is evidence that he was in love with a young lady of Summit, who entered a convent in 1851⁸—he did not join the Union Army, but remained in Washington, where, as a civilian, he attended the sick and wounded in the military hospitals. Toner's reputation was soon established beyond the Catholic community—the Smithsonian Institution summoned him to attend George Catlin during the last months of the artist's life.⁹ His practice grew and his investments prospered; by 1865 he was in comfortable circumstances, with a wide circle of friends and sufficient leisure for his avocations.

Toner was an active member of the Medical Society of the District of Columbia; he was chairman of its library committee, a determined promoter of plans for a permanent hall, and finally its president. He began to attend the annual meetings of the American Medical Association, was named in 1868 to the committee to consider the practicability of the Association's establishing a library (which was done the next year),¹⁰

⁷ Charles J. Boeswald to Toner, Jan. 6, 1855; William Walsh to Toner, Nov. 1, 1855, *ibid.*, No. 2; "Biographical Sketch of J. M. Toner, M. D.," *Northwestern Med. & Surg. J.*, 1873, 3: 247-50.

⁸ Ginnie Josephine Warde to Toner, Aug. 10, 1851, Toner Papers, No. 2.

⁹ William J. Rhees to Toner, Oct. 4, 1872, *ibid.*, No. 9.

¹⁰ The history of this library is related by Marjorie H. Moore in Morris Fishbein, *A History of the American Medical Association, 1847 to 1947* (Philadelphia: Saunders, 1947), 1071-78. Toner's correspondence shows that he took a major part: he drafted the committee's report, which, adopted by the Association, was the library's charter; he circularized a printed appeal to the members of the Association for books; and he made arrangements, first with the Medical Society of the District of Columbia and the Library of Congress, then with the Secretary of the Smithsonian Institution, for the deposit of the books. A. R. Spofford to Toner, April 3, 1869; Joseph Henry to Toner, April 28, 1870; Nathan S. Davis to Toner, Dec. 3, 1868, Sept. 22, 1869;

and in 1873 was elected president. In his presidential address Toner pointed out the importance of laboratory and other modern technical methods in the diagnosis and treatment of disease, and urged his professional colleagues to take firm positions of leadership in promoting public health measures.¹¹

Public health in fact received more of Toner's attention than medical science. In the American Public Health Association, of which he was also president, Toner called for an extension of what he called state medicine, for more boards of health and better laws, for preventive health measures, and for the conservation of natural resources. Pure drinking water, he asserted at one point, is essential for the health of the people; streams should everywhere be protected from pollution. "Every housekeeper within a city corporation," he continued, "is entitled to an adequate amount of pure potable water. *A manufacturing establishment, however, has no such right.*"¹²

Many of Toner's professional writings were on aspects of public health; most employed statistics in some way. Appreciating the relation of physical elevation to health and disease, Toner prepared, largely from historical records, a list of North American cities and towns where yellow fever and malaria had occurred, and where, considering elevations, temperatures and rainfall, the diseases might be expected to break out again.¹³ Fully aware that the summer months were a time of disease and suffering for the poor in urban areas, he proposed that parks be established where mothers might take their "sick and debilitated children" during the summer months to enjoy fresh air, clean water and milk, fresh fruits and vegetables, in hygienic surroundings.¹⁴ Citing

Charles A. Lee to Toner, Aug. 19, 1869, Toner Papers, Nos. 7, 8, 73, 84. Though warmly approved in principle, the National Medical Library was neither supported nor used by the American Medical Association or by practicing physicians. It did not grow, was soon overshadowed by the Surgeon-General's Library, and in 1894 the Association authorized its removal to the Newberry Library in Chicago. In 1907 the Newberry sent it to the John Crerar Library in the same city.

¹¹ Fishbein, *History of the American Medical Association*, 87-89.

¹² Toner, *An Address on some of the leading Public Health Questions* (American Public Health Association, Public Health Papers, II, 1875), 8.

¹³ Toner, "The natural history and geographical limits of yellow fever within the United States," reprinted from *Charleston Med. J. & Rev.*, n. s., 1874, 2, in *Contributions to the Study of Yellow Fever* (Washington, 1874), 3-36.

¹⁴ Toner, "Free parks and camping grounds; or sanitariums for the sick and debilitated children of large cities, during the summer months," *Northwestern Med. & Surg. J.* 1872, 3: 167-75. This paper was expanded in *The Sanitarian*, 1873, 1: 71-81. "The State," wrote Toner, "has a direct moral and pecuniary interest in the health and lives of her citizens." *Ibid.*, 72.

his tables, he predicted that people would soon prefer the mountains to the seashore for vacations, and surmised "that there may be found a region in some part of New Mexico, perhaps as favorable for patients suffering from Phthisis, as can be found within the boundaries of the United States." ¹⁵

Toner appears to have come to history from the study of public health and medicine. While preparing in 1864 an argument for compulsory vaccination against smallpox, he became interested in the early history of inoculation, and turned aside to write papers on the subject in Massachusetts and Pennsylvania. The latter was an excellent survey of inoculation in that state from the beginning to the introduction of vaccination by John Redman Coxe in 1802. It contained a good deal of general Philadelphia medical history and biography, much of it gleaned from newspapers, and included in a long footnote an account of Dr. Lauchlin Maclean, for whom it was claimed he was the author of *Letters of Junius*.¹⁶

In 1866 Toner was invited to speak at the anniversary meeting of the Medical Society of the District of Columbia. He chose to tell the story of the Society, which was also much of the story of medicine in Washington. The resulting monograph foreshadowed much of Toner's future work as a medical historian; in method and content it was one of his best; and it established his reputation as the best informed person in the city on historical subjects.¹⁷

The Medical Society was founded in 1817, although Washington physicians had met occasionally for specific purposes before that date. For many years the Society's progress was uncertain, for it was weakened by internal dissensions, regarded with suspicion by the public and the Congress, and its strength drawn off by rival organizations. No minutes or other systematic records of its early years survived; even the date of founding was in doubt. Toner had therefore to reconstruct its history

¹⁵ Toner, *Annual Oration before the Medical and Chirurgical Faculty of Maryland, April 14, 1875. Contribution to the Medical History and Physical Geography of Maryland* (Baltimore, 1875), 30; *Dictionary of Elevations and Climatic Register of the United States* (New York, 1874), xxii.

¹⁶ Toner, "A paper on the propriety and necessity of compulsory vaccination," American Medical Association, *Transactions*, 1865, 16: 307-30; "Inoculation in Pennsylvania," Medical Society of the State of Pennsylvania, *Transactions*, 4th ser., pt. 1 (1865), 163-82; "History of inoculation in Massachusetts," Massachusetts Medical Society, *Journal*, 1867, 2: 151-204.

¹⁷ Toner, *Anniversary Oration delivered before the Medical Society of the District of Columbia, September 26, 1866* (Washington, 1869).

from its charter, miscellaneous manuscripts and printed forms and books, and notices in the *National Intelligencer*. As he pored over the pages of Washington newspapers for references to the Society, Toner's view broadened, for he found many data on the profession as a whole. The printed address contained brief accounts of the medical schools and hospitals of the District, a list of all the 71 buildings that housed sick and wounded soldiers during the Civil War, tables of the ratio of physicians to the general population in successive decades, and a bibliography of the writings of Washington physicians, most of which, Toner remarked, "are in my possession."

Newspapers, Toner now realized, were an important source, mostly untapped, of information about the medical profession and medical practice, indeed about many aspects of social history. Accordingly, Toner engaged a young woman to winnow the data from the file of the *Pennsylvania Gazette* in the Library Company of Philadelphia, and make an index slip for every report of health, disease, medicine, doctors, and, Toner reminded her, "advertisements of even quack Doctors."¹⁸ The notes thus made were assembled alphabetically and mounted in a large scrap-book.¹⁹

Abcess of the lung—a case of Dr. DeNormandie. 19 Dec. 1771

C A of New Jersey—a paper on preparation for inoculation and a review of Heberden's paper. 21 June 1760

Ague—specific pill for cure of. 20 Aug. 1783

The *Pennsylvania Gazette* index proved so useful that Toner compiled other indexes—of all the physicians mentioned in Thacher's *Military Journal* and *American Medical Biography*, for example. Good indexes, it was clear, were the key to historical sources of all kinds, and he made them with unflagging industry and enthusiasm. He also prepared an index of the names of persons and places mentioned in Bishop Meade's *Old Churches, Ministers and Families of Virginia*, and a subject index of the contents of all American medical journals.²⁰

¹⁸Toner to Miss L. Pierce, March 10, 1869, Toner Papers, No. 1; Fanny M. Leahey to Toner, Nov. 3, 1866, *ibid.*, No. 6.

¹⁹"Index to Medical Matters found in the *Pennsylvania Gazette* from its first Issue to the close of 1800," Toner Papers, No. 170.

²⁰Toner, "Index to Names of Persons and Churches in Bishop Meade's *Old Churches, Ministers and Families of Virginia*," revised by Hugh A. Morrison in *Southern History Association, Publications*, XI, No. 4, supplement (1898). Toner failed to interest a publisher in his index to medical journals. Henry C. Lea to Toner, Jan. 23, 1871, Toner Papers, No. 8.

By 1865 Toner had determined to undertake a biographical dictionary of American physicians. He explained his purpose and requirements in a printed questionnaire and circular.²¹

Hundreds of physicians [the circular read] have died in different parts of the United States, after devoting a long and useful life to their profession, of whose existence and labors there is no record. This should not be so. The want of a work furnishing an outline of the lives of American physicians has long been felt; and that the project meets the approbation of the profession and of the relatives of the deceased medical men, has already been evinced by valuable contributions from different parts of the country.

The questionnaire introduced by this announcement contained 21 queries, mostly asking for specific details of birth, parentage, education, places of residence, and publications, but ending with a stern injunction.

XX. Any particulars not coming within the above—property accumulated, personal appearance, copy of or reference to any biographical sketch, or obituary notice, in professional or popular prints. Engraving and autograph desired, and, if obtainable, any specimens of writing, published or unpublished. If there be any likeness, mention the artist and possessor. Omit nothing which will give interest to a biographical sketch.

Toner sent the circular to other physicians, to children and grandchildren of physicians, to postmasters, newspaper editors, and local historians; to anyone who might be able to help in his quest for data on America's deceased physicians. Medical journals printed Toner's appeal, and he himself continued to mail out copies for many years. Though the questionnaire required detailed knowledge and research to answer, to an astonishing extent the recipients were disposed to help. "Dr. Hough handed me one of your circulars soliciting data for Sketches of Deceased American Physicians," wrote the proprietor of the Livingston Republican Power Press Printing Establishment of Geneseo, N. Y.²²

I called in Dr. Lauderdale of this village, who has long been an officer of the County Med. Society, who sat down with me and we counted up seventeen physicians who had died in this county and of whom we may secure the necessary data. The County medical society is soon to meet in this village. If you will send me the necessary blanks I will see to it that the matter is attended to. Your enterprise is most praise-worthy.

Others were equally forthcoming. Dr. George Bacon Wood of Phila-

²¹ The printed "Circular Soliciting Information for a Biographical Dictionary of Deceased American Physicians" and early ms. drafts are in Toner Papers, No. 64.

²² L. L. Doty to Toner, May 3, 1870, *ibid.*, No. 8.

delphia sent Toner copies of his obituary memoirs of Joseph Parrish, Samuel G. Morton, and Franklin Bache, and a catalogue of medical graduates of the University of Pennsylvania.²³ Some persons, in addition to providing biographical data, suggested the names of others who could help, and names of physicians for inclusion in the biographical dictionary.²⁴ Only one or two demurred at the prospect of a complete biographical sketch of the recently dead. "Many eminent physicians here—I regret to say it," explained Dr. O. D. Palmer of Beaver County, Pa.,²⁵

died by intemperate habits. If we observe the Latin maxim, *De mortuis nil nisi bonum*, we cannot give the true cause of the decease; if we substitute *verum* for *bonum*, friends will complain. I have especially in view two or three German Colleagues. This class of practitioners is strongly represented in Pennsylvania, and many of them popular and successful. Many of these have been educated for surgeons, in Germany, a profession much *below* that of *Doctor*...

Within three or four years Toner had collected biographical notes on 4,000 American physicians, and expected that his file would have "when completed 10,000 which will give it a national character."²⁶ The first publication to come from Toner's questionnaire was *Contributions to the Annals of Medical Progress and Medical Education in the United States before and during the War of Independence*, which he compiled at the request of the Convention of School Superintendents in Washington in 1872 and which was published by the Government Printing Office in 1874. Neither methodical nor exhaustive, uneven in the treatment of related or parallel topics, the *Contributions* nonetheless furnished a mass of historical and biographical information, much of it collected and published for the first time, for a history of medicine and the profession in the United States. Toner himself regarded the book "rather as memoranda for the use of those interested in similar studies, than as an attempt to push investigations to their conclusions or to follow the exactness of method."²⁷

²³ George B. Wood to Toner, July 4, 1866, *ibid.*, No. 94.

²⁴ See for examples, letters to Toner from Edward Alden of Randolph, Mass., July 28, 1866; Joseph Draper of Worcester, Mass., Sept. 23, 1867; J. M. Cooper of Lancaster, Pa., April 25, June 8, July 8, 1867; Ellsworth Eliot of New York, June 8, 1866; H. A. Ford of Leonardtown, Md., June 14, 1867; William M. Hiestor of Reading, Pa., March 8, 1867; Robert S. Smith of Bound Brook, N. J., Oct. 9, 1866; W. C. van Bibber of Baltimore, Md., March 4, 1867; John L. Vandervoort of New York, Dec. 13, 1866; Claiborne Watkins of Little Rock, Ark., Oct. 9, 1869, Toner Papers, Nos. 8, 65, 74, 75, 76, 80, 91, 93.

²⁵ O. D. Palmer to Toner, Nov. 22, 1866, *ibid.*, No. 87.

²⁶ Toner to Joseph Carson, March 10, 1869, College of Physicians of Philadelphia.

²⁷ Toner, *Contributions*, 7.

Yet one wishes that his presentation had been less hasty and slipshod, better organized, more thoughtful, for he offered some generalizations most readers would like more light on. He noted, for example, that in colonial America the practice of the learned professions was apt to be combined in one person; he appreciated that sparseness of population was a reason for the lack of medical facilities; he included midwives in the medical profession, and named some; he explained at great length the distinction between physician and surgeon, and why in America both were called doctor; and he calculated the ratio of physicians to the general population, employing figures that have been widely accepted since.²⁸ Brief sections of the address were devoted to medical education, medical regulations, hospitals, physicians in the Revolutionary War, and similar topics; but the bulk of the monograph consisted of biographical notes on physicians, arranged by colony and state, often with only a fact or two about each:²⁹

Dr. Cabin [Corbin] Griffin, born in Virginia of Welsh descent, practiced in Yorktown.

John Glover, having graduated at Harvard in 1650, went to Europe, where he received his medical degree at Aberdeen, Scotland. On his return he settled as a physician at Roxbury.

Thomas Oliver was in practice in Boston about 1640.

"You are certainly a wonderful digger in the mines of American medical lore," wrote Samuel D. Gross,³⁰ who read the little book at a sitting the same day it was delivered, "& deserve great credit for your pains-taking labors. There are some very curious things in your brochure, which require to be closely studied to be fully appreciated." Then, turning to the subject of medical education, in which he was deeply concerned, Gross continued warmly:

If we could only raise the standard of education, preliminary & college, of our students, & make gentlemen of them all, how happy we both should be! The miserable wretches who now degrade our Schools, unwashed, with dirty nails, unkempt hair, slouched hats, with their hands in their pockets when they meet or pass a professor, are a disgrace to the profession, & injure the whole leven [?]. Surely there ought to be a remedy for all these *crimes*! Surely these *animals* ought to be kept out of a noble profession! If we could only have honest, competent boards of examiners, there might be some hope, but, as matters now are, there is no prospect of amelioration, no hope of improvement.

²⁸ *Ibid.*, 105-06.

²⁹ *Ibid.*, 12, 13.

³⁰ Gross to Toner, Jan. 2, 1875, Toner Papers, No. 78.

The *Annals of Medical Progress* was the first of three addresses or monographs which, between them, attempted to cover the whole history of medicine in the United States. The second, entitled *The Medical Men of the Revolution, with a Brief History of the Medical Department of the Continental Army*, was an address to the Alumni Association of Jefferson Medical College in March 1876. Announcing that his purpose was "not to eulogize—but to collect material and present a few facts from which history may be written,"³¹ Toner presented a full straightforward narrative of the medical department of the Continental Army, with some account of the Massachusetts provincial service that preceded it. The emphasis was on administrative history, with the facts drawn from the *Journals of the Continental Congress*, Peter Force's *American Archives*, the *Writings of George Washington*, the publications of John Morgan, and the records of provincial assemblies; but the monograph included many short biographical notes and sketches of several categories of physicians—the physicians- and surgeons-general, physicians who held civil office, and the like—and it ended with a list of 1200 names (which Toner said he forebore to read to his patient audience) of physicians and surgeons of the army and of medical men who served the American cause in other capacities. The list was not complete or accurate, but no one had ever compiled such a list before; and, refined and augmented, it remains useful to the present day.³²

Hardly had Toner completed reading this address to the Jefferson alumni than he was called on for another—the concluding essay in his history of medicine in the United States.³³ The occasion was the International Medical Congress at the Centennial Exposition at Philadelphia in September. Toner's task, in this paper, was greater than any he had yet undertaken—to relate the progress of medicine in all 38 states of the Union, concentrating on the achievements and personalities of the century since 1776. It proved harder to learn about Missouri than Massachusetts medicine, and in some ways more difficult to determine the outstanding figures of the 19th than of the 18th century. To help in his preparation, Toner resorted again to a circular. He wrote scores, per-

³¹ Toner, *Medical Men of the Revolution*, 6.

³² *Ibid.*, 117-29. Compare Toner's list with that in Louis C. Duncan, *Medical Men in the American Revolution, 1775-1783* (Carlisle Barracks, Pa.: Medical Field Service School, 1931; reprinted New York: Augustus M. Kelley, 1970), 379-414.

³³ Toner, "Address on Medical Biography, delivered before the International Medical Congress at Philadelphia, September 5, 1876," *Transactions of the International Medical Congress* (Philadelphia, 1877), 91-137.

haps hundreds, of letters to his medical correspondents, asking them to name, preferably in order of distinction, the ten outstanding physicians and surgeons of their respective states.

The responses varied in interesting ways. The Boston physicians, for example, appear to have consulted together and agreed upon their list: Josiah Bartlett, Zabdiel Boylston, Edward Holyoke, James Jackson, James Lloyd, James Thacher, John Ware, John Warren, John C. Warren, and Benjamin Waterhouse.⁸⁴ (Toner dropped Zabdiel Boylston from the Massachusetts nominees because he fell outside the period; he added John Brooks, probably because of Brooks' distinguished record in military and public life.) But Ashbel Smith, sometime Texas minister to Great Britain and secretary of state of the Republic of Texas, declined for reasons of "delicacy" to make any selection. On the other hand, the Pennsylvanians were dismayed by the limitation to ten. "Remember Penn'a has been always the seat of Medical Science in this country," warned William H. Egle, himself a historian as well as a physician, "and hence its bright galaxy of medical Stars." He sent Toner sixteen names, and added that there were as many more living and dead who were equally distinguished. "Now what shall I do with this array?" he demanded.⁸⁵ Alfred Stillé of Philadelphia, though protesting he had never taken any particular interest in medical history, sent along 13 names, which he was careful to arrange in alphabetical order.⁸⁶

If Pennsylvania had too many outstanding physicians to choose from, other states had too few. Claiborne Watkins of Little Rock, for example, reminded Toner that Arkansas was not long removed from the wilderness. "I am convinced that there were many Physicians of real genius and eminence in their sphere, but alas! if I except isolated stories and

⁸⁴ See the replies of Nathan Allen of Lowell, Mass., April 10, 1876; Francis H. Brown of Boston, May 10, 1876; James R. Chadwick of Boston, May 2, 1876; Samuel A. Green of Boston, May 6, 1876; and Oliver W. Holmes of Boston, April 7, 1876, Toner Papers, Nos. 55, 70, 71, 78, 80. Holmes' letter is printed in an appendix to this paper.

⁸⁵ William H. Egle to Toner, April 22, 1876; Ashbel Smith to Toner, Aug. 26, 1876, Toner Papers, Nos. 75, 91.

⁸⁶ Alfred Stillé to Toner, April 4, 1876, *ibid.*, No. 91.

Henry Bronson of New Haven, Conn., gave Toner the names of ten outstanding Connecticut physicians; but he was not happy about ranking them. "It is not possible to compare intelligently & successfully one talent, one attainment or accomplishment, one kind of skill or success, with another; great medl. scholarship & a limited practice with illiteracy combined with large experience & acknowledged skill, &c. I have no doubt the physicians of this State would be best satisfied with alphabetl. arrangement." To Toner, May 26, 1876, Toner Papers, No. 70.

traditions, their good deeds and accumulated experience died with them." They had left no books, papers, lectures or other evidences of their study and research to judge them by.³⁷ Illinois was also relatively young, too recently settled to have produced physicians of truly national reputation. One who qualified was Daniel Brainerd. He was a man of undoubted professional and scientific achievement, but it was regrettable, Nathan S. Davis thought, that published biographical sketches said nothing about his private character. "He was really one of the most purely selfish men I ever knew, and during the last ten years of his life devoted more time and thought to *real estate* speculation and money getting than to his profession. I do not mention this for you to repeat but simply to guard against the commission of positive errors of statement."³⁸ Toner would never have repeated Davis' characterization: the sketch of Brainerd appeared with no "positive errors of statement."

Dr. Daniel Brainerd, a native of New York, was a physician and surgeon of distinction. He settled in Chicago as early as 1835, and soon acquired a leading professional business, especially in Surgery. He was one of the founders of the Rush Medical College, and long one of its professors. He contributed articles of value to the Medical Journals, and to the Illinois State Medical Society's Transactions. (b. 1812; d. Oct. 10, 1866.)³⁹

The address opened with several pages of general medical history. Dividing the century since 1776 into four quarters, Toner alluded briefly to the influence of wars on medical and surgical knowledge in each period, the impact of yellow fever and cholera epidemics, the benefits bestowed by vaccination and anaesthesia, the founding of medical schools and the proliferation of medical journals. He then described briefly the contributions of 20 outstanding physicians of the century just passed, and offered 98 additional names without comment. The final portion of the address, which was based on the replies to the letters Toner sent doctors throughout the Union, contained the names of the outstanding physicians of each of the 38 states. A comparison of the published text with the nominations received shows that, with few exceptions, Toner included in his lists every name that anyone proposed. In his original draft Toner had written "formal biographies" of another hundred of "the most eminent medical men of the United States." As it was, Toner's paper

³⁷ Claiborne Watkins to Toner, April 23, 1876, *ibid.*, No. 93.

³⁸ Nathan S. Davis to Toner, April 10, 1876, *ibid.*, No. 73.

³⁹ Toner, "Address on Medical Biography," *loc. cit.*, 104-05.

ran to 47 closely printed pages; and the sketches were "necessarily"—and, one feels mercifully,—“omitted for want of space.”⁴⁰

Two other biographical projects of Toner's should be mentioned. One was the record of the Rocky Mountain Medical Association. This was a social group, composed of 123 physicians, their wives, and a few non-medical gentlemen who accompanied them from the east coast to San Francisco in 1871 for the first meeting of the American Medical Association west of the Rocky Mountains. (Toner carried a letter of introduction to Brigham Young, but seems not to have used it.)⁴¹ The members held reunions during the annual Association meetings. In 1877 Toner, as president, delivered an address with a title almost as long as the journey: "Some Observations on the Geological Age of the World, the Appearance of Animal Life upon the Globe, the Antiquity of Man, and the Archaeological Remains of Extinct Races found on the American Continent, with Views of the Origin and Practice of Medicine among uncivilized Races, more especially the North American Indians." The address was based on wide, but superficial, reading; it revealed only a library acquaintance with anthropology, archaeology, and paleontology. Toner published it, together with the presidential addresses of former years and a biographical dictionary of all the Rocky Mountaineers (prepared from data collected by a questionnaire) in a stout little volume of 414 pages in 1877.⁴² The second biographical project was to collect data on each of the founders of the American Medical Association. Toner consulted the widows, children, and colleagues of the deceased founders, collected obituary notices from the medical and lay press, and, in the case of survivors, succeeded in obtaining some informative personal recollections. Nathan S. Davis, for example, wrote a particularly interesting account of his boyhood, education, early practice, and professional career in Binghamton, N. Y., and Chicago.⁴³ And for 20 years Toner was chairman of the Necrology Committee of the A. M. A., writing a good many obituaries himself and compiling an alphabetical list of all necrologies in the *Transactions* of the Association, which he printed as an appendix to his own report of 1882.⁴⁴

⁴⁰ *Ibid.*, No. 93.

⁴¹ F. B. Steck to Young, May 7, 1871, Toner Papers, No. 8.

⁴² Toner, *Address before the Rocky Mountain Medical Association, June 6, 1877* (Washington, 1877).

⁴³ Nathan S. Davis to Toner, March 25, 1875, Toner Papers, No. 73.

⁴⁴ Fishbein, *History of the American Medical Association*, 623-24; Medical Society of the District of Columbia, *Transactions*, n. s., 1897, 1: 150, 155-56.

One reason why Toner could produce these prodigies of data—I have only hinted at his statistical studies, said nothing about his more modest historical addresses and compilations like that on theater fires, and will not mention the research and writing on George Washington which engrossed so much of the last 15 years of his life—was that he had a very large reference library of his own. From the time he came to Washington Toner was a tireless collector of medical books, concentrating on American imprints, medical journals, and the classics of the profession. He haunted the bookstores and junkshops, where his practice of buying old periodicals by the pound led some to think him indiscriminating, not realizing that he often found treasures in those bales of paper and used the rest for exchange. Even allowing for inflation, his purchases might excite the envy of a modern collector or librarian. A Providence, R. I., bookseller offered 50 volumes of the *Boston Medical and Surgical Journal* for 37-½ cents each. John Campbell of Philadelphia sold him Heberden's smallpox pamphlet, with Franklin's recommendation, for \$10. From John K. Brady of Shakspear's Head in Baltimore, Toner bought Rush on the *Diseases of the Mind* for 75 cents, John Sappington's *Theory and Treatment of Fevers* for 20 cents, and inaugural dissertations and Philadelphia yellow fever pamphlets for 25 and 50 cents each. He lost William Smith's *Eulogium of Benjamin Franklin* at a Boston auction—his bid was \$1.25, and it went for \$1.75—but he acquired at the same sale a bundle of 26 medical pamphlets for \$1.56. One dealer, after offering Toner four titles on the cholera epidemic of 1832, all from the library of John Redman Coxe, told him he had some early 18th-century books as well; these, he apologized, were "probably more curious than useful," but, he continued, as "negative evidence of the progress of the sciences," were "therefore of value."⁴⁵

By 1870 Toner's library was growing at the rate of 800-1,000 volumes a year. A catalogue prepared in 1871 shows about 5,500 medical titles—Albinus, Bard, Elisha Bartlett, William Beaumont, Bichat, Boerhaave, Cullen, John Howard, William Hunter, Jenner, Morgagni, Samuel G. Morton, Rush, Lemuel Shattuck, Sydenham, Van Swieten, Vesalius.⁴⁶

⁴⁵ Letters to Toner from Edward Barrington, April 23, 26, 1866; John K. Brady, Jan. 23, Feb. 6, 1866, Oct. 18, 1867; John Campbell, April 11, 1864; John P. Des Forges, July 10, 1866; O. F. Fassett, May 9, 1876; Frank J. O'Connor, March 12, 1878; Toner to C. F. Libby, Dec. 11, 1878, Toner Papers, Nos. 1, 6, 7, 76, 87.

⁴⁶ Dr. W. Lee, comp., *A Catalogue of Medical Works in the Library of Dr. J. M. Toner*, Arranged alphabetically by Authors (1871), Toner Papers, Box 159. In the same box are the supplements for 1872-78.

The collection also contained manuscript lecture notes taken by students of Benjamin Smith Barton, Boerhaave, Cullen, David Hosack, Valentine Mott, Alexander Monro, Benjamin Rush, and other teachers in both America and Europe;⁴⁷ and there were miscellaneous autograph letters: of physicians of the Revolution like James Craik, Silvester Gardiner, Edward Hand, Arthur Lee, James McHenry, Donald McLean, Johann David Schoepf, and James Thacher; and of public figures as well.

Laymen offered Toner books as gifts or to buy; executors asked about disposing of old books in the estates they administered. Such was his reputation that even professional librarians took his advice about how to store pamphlets properly and how to file loose sheets of paper.⁴⁸

Toner's files were one of the wonderful features of the library. He had begun before 1860 to clip from the daily papers important state papers, public addresses, and reports of political events. He soon extended his coverage to necrology and biography. In the latter 1860s he engaged young women systematically to clip biographical sketches and notices of physicians from newspapers, medical journals, college alumni directories, and biographical dictionaries like Thacher's. Sometimes the clerks added bibliographical notes cut from library catalogues and booksellers' lists. From physicians, it was a short step to famous men of every age, nation, and profession. By 1880 a visitor to Toner's library might have been excused for believing his host had undertaken to compile a biographical register of a substantial portion of all the human beings who had ever lived.

Cut and trimmed with astonishing precision, the clippings were pasted on heavy paper sheets, about 8 by 10 inches in size; and these were filed alphabetically in several great wooden filing cabinets which Toner had constructed for the purpose. These cabinets of laboriously collected data survive in the Library of Congress to this day. One cabinet, containing 36 drawers, holds cards on which are mounted at least one fact about each of about 40,000 doctors. Two more cabinets of the same size—72 drawers in all—are filled with clippings on perhaps 80,000 non-physicians of every description: Chastellux, André Chénier, and Cheops are in close proximity. In addition Toner filled two large wooden foot-lockers to the brim with newspaper clippings on every imaginable topic;

⁴⁷ In Toner Papers, Nos. 142-46. Nos. 147-51 contain hundreds of printed dissertations, mostly of the 1830s and 1840s.

⁴⁸ Philosophical Society of Washington, *Bulletin*, 1885, 8: 29; H. A. Ford to Toner, Aug. 24, 1888, Toner Papers, No. 76.

he sorted them roughly into small packets, but otherwise never got around to organizing them. Perhaps the most "finished" of the files of clippings are now to be found in some 40 small cases, designated by the Library of Congress "Toner Excerpts." These are longer newspaper stories, neatly mounted on heavy paper, the paper folded and stitched, with the title and source carefully written on the cover—the whole resembling a little pamphlet. If anything, the Excerpts are more varied than the other lots of clippings: in Case 25, for example, the first six items are an article headed "Air Fit to Breathe" from the Washington *National Republican*, 1884; the Proceedings of the International Medical Congress from the Washington *Star*, 1887; an article on "Street Car Rails: A New Method of Constructing Tramways," from the Washington *National Republican*, 1884; the Speech of Hon. Joseph Segar on the Disunion Issue, November 16, 1860, from the Washington *National Intelligencer*, 1860; an essay on Bedford, Pa., in the winter, from the Baltimore *Sun*, 1890; and a story on the origin of the Gridiron Club from the Washington *Evening Star*, 1889. Another clipping in this case of Excerpts is from a Washington paper of 1890, entitled "Seven of the Finest: Origin of the Police Force."⁴⁹

Toner soon came to regard his library as a private obligation and a public service. During the cholera epidemic of 1865, for example, he circulated a list of the 68 books on the disease which he owned, offering to lend them to any doctor who might need them.⁵⁰ His fellow-physicians would stop by his house on Louisiana Avenue to borrow whatever they needed, leaving, if he was out, a note on their prescription form.⁵¹ Soon Toner was receiving inquiries from out of town. William Pepper of Philadelphia, for example, required for a lecture on the reform of medical education the names of the medical schools actually in operation in the United States, with dates of founding. "I know of no one else in the country to whom I could apply with any chance of being directed where I can obtain this information," he explained. And when Pepper found he also wanted figures showing the number of physicians in Victoria, Australia, Toner got them, too.⁵² He supplied one inquirer with a pack-

⁴⁹ Toner's three biographical file cabinets are in the Stack and Reader Division, Stack 29, Library of Congress. The "Excerpts" and the two chests of unsorted clippings are in the Rare Book Division, Library of Congress.

⁵⁰ *A Catalogue of Medical Works on Cholera, in the Library of J. M. Toner, M. D.* (Washington, 1865).

⁵¹ A. F. A. King to Toner, April 27, 1874, Toner Papers, No. 83.

⁵² William Pepper to Toner, July 22, Aug. 14, Oct. 21, 31, 1877, *ibid.*, No. 88.

age of pamphlets on the bad effects of graveyards, another with the names of all the practicing physicians in 15 southern and southwestern states, a third with the text of the missing title page of a history of the valley of Virginia. Even John Shaw Billings came to Toner for data that could not be found in the Surgeon General's Library.⁵³

As the library grew Toner came to regard it not simply as a public service, but also as a national resource, which should not be dispersed at his death. Accordingly he offered it as a gift to any city that would erect a fireproof building to house it. Pittsburgh declined to accept it; Chicago failed to raise the money for the lot and building. Little Washington, Pa., which had a college with a new library building, expressed interest in receiving it.⁵⁴ So did the Library Company of Philadelphia, which had also just erected a huge building that could easily have absorbed the entire collection. Toner asked his friend Ainsworth R. Spofford, Librarian of Congress, about the Philadelphians' offer to take the collection. "The offer is a fair one, Doctor," Spofford replied, seizing his opportunity, "but the Library of Congress will do as well for you, I know." The prospect that "the pets of my life" would be safely deposited "under the Aegis of the Nation, for the future use and pleasure of those readers and students who shall come after us," appealed strongly to Toner;⁵⁵ and accordingly he gave his collection to the Library of Congress in 1882—the first such gift to the national library by a private citizen. Augmented by the books that came in after Toner's death, the collection numbered in 1897 nearly 25,000 volumes, as many pamphlets, and, it was estimated, nearly one million clippings.⁵⁶

Because of his unquenchable passion for collecting, Toner's contemporaries called him "the Fact-Hunter."⁵⁷ He was indeed. He had seen enough incomplete, inaccurate, and misleading historical accounts to know that accurate data are indispensably necessary to sound historical writing of any kind. In a day when there were few biographical dictionaries,

⁵³ Inquiries from John Shaw Billings, April 12, 1876, Dec. 2, 1882; Josiah Drake, June 5, 1869; Edward Warren, Aug. 19, 1872; Stephen W. Wickes, Feb. 22, March 5, 1882, *ibid.*, Nos. 64, 74, 93, 94. When Toner could not supply S. Weir Mitchell with a copy of Sanctorius' *De erroribus in medicina evitandis*, the latter concluded the volume was not to be found in the United States. To Toner, Oct. 6 [1878], *ibid.*, No. 86.

⁵⁴ Joseph H. Little to Toner, Oct. 20, 1877; Nathan S. Davis to Toner, Dec. 25, 1878, *ibid.*, Nos. 73, 74.

⁵⁵ Toner to A. R. Spofford, March 19, 1882 (draft), *ibid.*, No. 1.

⁵⁶ *Report of the Librarian of Congress* (Washington, 1897), 37-38.

⁵⁷ Antisell, in Toner, *Address before the Rocky Mountain Medical Association*, 399-400.

bibliographies, or reliable biographies or histories; before Appleton, Kelly and Burrage, or the *Dictionary of American Biography* yet existed, Toner had to find out for himself who the doctors of two centuries had been. He addressed himself to his self-imposed task with unflagging industry; he urged others to follow his example; and his achievement was no mean one.

For his work Toner quickly realized he must have a library, as anyone must who wanted to do serious historical research and not merely repeat what others had published; and so a substantial part of his attention and substance were spent in building libraries and encouraging others to do so. His own collection, soon surpassing those of Samuel S. Purple of New York City and George J. Fisher of Sing Sing, N. Y.,⁵⁸ became one of the largest medical libraries in private possession. Long before he died in 1896 Toner assured its preservation by the nation. He was also a founder of the American Medical Association Library; he encouraged the Cambria County, Pa., Medical Society by bequeathing it his duplicates; and at the inauguration of the Columbia Historical Society he told his fellow-members firmly that in an institution like theirs a library was "a most urgent necessity."⁵⁹

More than this, Toner had a sense of the importance of social history, which professional historians neglected in their concentration on political, constitutional, diplomatic, and military history. In his presidential address to the Columbia Historical Society in 1894 Toner stressed the importance of local and social history, the significance of every invention in the useful arts. In particular he urged his fellow-historians to identify the springs and water courses used by the first settlers, to locate the original shore lines and establish the elevations. These, of course, were aspects of public health that interested Toner professionally; but public health itself was an integral part of the broad view of history that he held.

In his appreciation of social history, his tireless compiling of data, his use of statistics, Toner could be considered a remote forerunner of the age of historiography that opened after his death. He thus displayed some of the excellent qualities of the amateur historian. Yet his work revealed some of the deficiencies of the amateur as well. Toner's methods were

⁵⁸ George J. Fisher to Toner, Nov. 11, 1882, Dec. 10, 1889, Toner Papers, No. 76.

⁵⁹ Toner, "Inaugural Address as President of Columbia Historical Society," (Washington) *Evening Star*, May 8, 1894, Toner Excerpts, Case 38, no. 10 (Rare Book Division, Library of Congress).

often careless, and he rarely asked the significance of the facts he gleaned so laboriously. All facts seemed to him of equal significance; he presented them with no discernible selection or organization and without interpretation. The rise of the medical profession in the United States after the middle of the eighteenth century, for example, illustrates a variety of intellectual movements and social processes; but Toner barely hinted at them, if, indeed, he was aware of them at all. The repeated disclaimers in his publications that they were only collections of data for others to use seem quite as much excuses for haste and incompleteness as expressions of scholarly modesty.

Like many amateurs, Toner attempted too much. Recognizing some important bibliographical needs and identifying gaps in knowledge of medical and public health history, he threw himself into the task of filling the deficiency with more energy and industry than intelligent direction. Toner might have compiled a reasonably complete biographical file on American doctors; but it was beyond his time and means to collect data on 100,000 others as well, from the Pharaohs to the present time. Ultimately the sheer labor of coping with the flood of clippings proved too much; he could no longer catalogue and index them. In 1882 Toner admitted to a correspondent that he had no thought of publishing the data he had collected.⁶⁰ Though in some respects a pioneer in medical history, Toner laid no foundations on which scholars coming afterwards could build; and his files and collections must have become as inaccessible to him as they are of little use to present-day scholars.

Though Toner's contemporaries might have recognized the basis of these criticisms, they would probably have judged them on the whole wrong-headed and ungracious. After all, Toner rescued a good many names from oblivion; he set out for the first time some of the basic facts of American medical history. His writings, addresses, and far-flung correspondence acquainted his fellow-physicians and others with the history of the profession and of an important part of the national history. His work was a starting point for the work of others. William A. M. Wainwright of Hartford, Conn., gratefully admitted that he had "cribbed" materials from Toner's "general History of the Profession" for an article of his own in 1887; while Paul F. Eve of Nashville, Tenn., told him that *Contributions to the Annals of Medical Progress* was "just what I needed in preparing my biographical sketches."⁶¹ He encouraged many

⁶⁰ Toner to W. H. Bady, Aug. 20, 1882 (draft), Toner Papers, No. 64.

⁶¹ Paul F. Eve to Toner, Dec. 17, 1874; W. A. M. Wainwright, Aug. 11, 1887, *ibid.*, Nos. 76, 93.

historians of medicine with gifts and loans of books, notes, and manuscripts. "I spent half the night devouring them," wrote John R. Quinan of Baltimore about the contents of one such parcel, "& felt as happy as a Boy with a few tickets to a Circus."⁶²

For founding and encouraging libraries, for contributions as an officer of professional medical and public health associations, for published historical monographs, for making other medical historians as happy as schoolboys with tickets to a circus, Toner received generous and grateful recognition from his own generation. He may even be judged, by someone who will read his 75,000 letters preserved in the Library of Congress, to have deserved that reputation in the nineteenth century and our respect in the twentieth.

Appendix

Two Letters of O. W. Holmes to Joseph M. Toner, 1876

While preparing his address on American medical biography for the International Medical Congress at Philadelphia in 1876, Toner wrote Dr. Oliver Wendell Holmes, asking him to name the ten outstanding physicians in the history of Massachusetts. Upon receiving the reply (April 7), Toner sent Holmes copies of his own publications and asked for a copy of Holmes' lecture on medicine in Massachusetts. Holmes complied with the request (April 17) and added "a few words, somewhat confidentially," on the achievements of American medicine in the preceding century.

The letters are preserved in the Toner Papers, No. 80, in the Library of Congress. In the transcription of the letter of April 7, citations to biographical and other sources have been omitted.

Boston April 7th 1876

Dear Sir,

I have been consulting my memory and the medical biographies so as to enable me to make out a satisfactory list of ten names, as you requested, of Massachusetts physicians, deceased, proper to be mentioned as representatives of the profession, during the last century, among us. I think the list I give you is on the whole one which would be considered a fair one. I am of course prejudiced strongly in favor of my old instructors Dr. James Jackson and Dr. John Ware, yet I am

⁶² John R. Quinan to Toner, March 25, 1881, *ibid.*, No. 88.

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confident that both these names would be almost universally agreed upon as entitled to be classed with the elected ten representatives.

No.	Date of Birth	
1.	1680	Zabdiel Boylston. Introduced <i>inoculation</i> for small-pox into America.
2.	1728	Edward Augustus Holyoke. <i>The Centenarian</i> . Received a public dinner on his 100th birthday from the physicians of Salem & Boston. First President of the Massachusetts Med. Soc. An admired man and excellent physician.
3.	1728	James Lloyd. One of the best educated and most finished practitioners of his time. Thoroughbred, elegant, torrish, but the great Boston physician, surgeon etc. for nearly 60 years.
4.	1753	John Warren. Brother of Joseph Warren. Army surgeon. One of the earliest teachers of Anatomy. A founder, <i>the</i> founder, more than any other person of the Harvard Univ. Medical School.
5.	1754	James Thacher. Army surgeon in the Revolution. Author of Am. Med Biography—New Dispensatory—Observ. on Hydrophobia—Military Journal etc. etc.
6.	1758	Benjamin Waterhouse. Introduced <i>Vaccination</i> for small-pox into America. First Professor of Theory & Practice in Med. School of Harvard University.
7.	1777	James Jackson. Professor of Theory & Practice in Med. Sch. of H. U. from 1812 to 1836. The leading <i>medical</i> practitioner in Boston for many years. Author of Letters to a Young Physician etc.
8.	1778	John Collins Warren. Son of John Warren. Professor of Anatomy & Surgery etc. Med. Sch. of H. U. from 1815 to 1847. The leading <i>surgeon</i> in Boston for many years. Author of Surg. Obs. on Tumors and many other writings.
9.	1795	John Ware. Prof. of Th. & Pract. in Med. Sch. of H. U. from 1836 to 1858. Author of admirable papers on Delirium Tremens and Croup and of various other papers.
10.	1805	Elisha Bartlett (active in Lowell, Mass.). Professor in Coll. of Phys. & Surg. New York and in various other Institutions. Author of Philos. of Med. Science, A Treatise on Fevers. A remarkably candid, learned, philosophical and finished writer.

I have not mentioned Luther V. Bell, Samuel G. Howe, William G. Morton, Charles T. Jackson, Jeffries Wyman, all of whom had close relations with the medical profession, but were hardly known as medical practitioners.

If we could include the living I should name the venerable Dr. Jacob Bigelow Author of Am. Med. Botany, Sequel to the Dispensary, Nature in Disease and many other valuable books and papers; the originator of rural cemeteries (Mount Auburn) in this country, now nearly ninety years old, stone-blind, helpless in bed, but with a mind singularly bright and cheerful.

Henry J. Bigelow his son, whose treatise on Dislocations of the hip I am disposed to call the most original, thorough, and important contribution to surgical science (leaving out anaesthesia and perhaps ovariectomy) that I can now think of as having been made in this country.

As to etherization, they may fight about it as much as they like, it went forth to the world from the Massachusetts General Hospital and all the world knows the names connected with the first operation there which established it.

Dr Bowditch and Dr Morrill Wyman I believe share the credit of largely introducing paracentesis of the thorax in acute cases, but I know next to nothing about the matter, not having practised for more than twenty years.

It seems a pity that we cannot display the names of Dr Howe and of Jeffries Wyman on our State medical banner, but I suppose they would hardly be included.

Hoping that these hints may be a slight help to you, I am, my dear Sir

Yours very truly

O. W. HOLMES

P. S. I suppose of course you can get at the Transactions of the Mass. Med. Society. Also that you have or can get at my Lecture before the Mass. *Historical* Society on the history of Medicine in Massachusetts. I take it for granted that you have everything in your great Library at Washington and that Dr Billings knows all that has been written since Chiron took a pen in his hoof.

2d Postscript. I have not included *Nathan Smith*, because though he was born & educated in Massachusetts, he taught & practised mostly in other states.

Boston April 17th 1876

My dear Sir,

I think after seeing the publications of your own which you have kindly sent me, and for which I return my thanks, I may say that you have no occasion to ask any hints from me. I send you the Lecture I referred to, from which you may possibly glean something, and which at least will show you my way of treating a subject in some degree like that which you have to deal with.

I am going now to say a few words, somewhat confidentially, as it appears to me that you are one of the few Americans who like facts better than rhetoric.

A great many good, honest, sensible doctors, of fair intelligence and some professional knowledge, who have worked faithfully and devotedly in their calling and deserve to be held in honorable remembrance, we have doubtless had in this country. But our original contributions to medical science have been of very moderate amount, unless we include *dentistry*, where I suppose our countrymen have done a good deal. Take Anatomy, for instance. How utterly insignificant do our contributions seem! We live chiefly on the reputation of 'Horner's muscle' so called, though Duverney seems to have described it in 1749.* In physiology we have done a little better since the recent days of physiological laboratories. There

*I ought not to forget Morton's '*Crania Americana*.' His '*Anatomy*' is not what we might have expected of him.

may have been important contributions to practical medicine, but if I were asked point blank to name the six chief ones among them—apart from those respectable and useful compilations of which our country has been prolific, I should blush and stammer and write post haste to you or Dr Billings to know what they were.

No doubt we have done much better in Surgery. The magnificent army reports are perhaps its best monuments. Perhaps I might go further and say that *medical* as well as surgical *statistics* were the best things we had to show with the exception of very few really novel and ingenious practical innovations.

Anaesthetics constitute our chief claim in the eyes of the civilized world. I wish, if you refer to that, you would expose the contemptible way in which Simpson attempted to rake into his own crib the whole credit of their introduction, in the 8th edition of the Encyc. Britannica. Look out the different heads 'Anaesthetics,' 'Ether,' etc. & then look at Chloroform. (I am writing my recollection for the references.)

I have no doubt that with surgery and medical and surgical Statistics a fair show enough can be made. But I should not want to claim too much, or stretch the necks of native geese, otherwise quite respectable, to make them out swans, as in my opinion Gross had done in his recent review, notwithstanding that I myself came in for a share of his cartload of flattering epithets. Of all things I would avoid spread-eagle-ism in medicine. Its useful ministrations, not its show, not the 'brilliancy' of jabbering professors, are what it has to contemplate with satisfaction. I have made too many fine phrases myself to throw stones at other rhetoricians, but for all that I have the most intense disgust for the provincial exaggerations with which our countrymen are infested as with a disease—*morbus pedicularus*—*acari*—*ascarides*—or what you will—something which keeps up an itching only to be allayed by the application of superlatives.—On talking over these matters with Dr. Edmund H. Clarke (who has long been confined to his house with an internal ulcerative rectum—which does not seem to get better) he spoke of our *army hospital improvements*, which were so much thought of by the Germans in their late war. He also referred to Drs. Bowditch & Wyman's operation of *paracentesis thoracis*, to which I think I called your attention in my other letter. He also called to my notice the way in which Dr Gross had slighted Dr Bigelow's Treatise on Dislocations of the Hip—a first class contribution to surgery as the European surgeons have found out.

Believe me dear sir, Yours very truly

O. W. HOLMES

AMERICAN ASSOCIATION FOR THE HISTORY OF MEDICINE

REPORT OF THE FORTY-FIFTH ANNUAL MEETING

MONTREAL, CANADA

May 3-6, 1972

The forty-fifth annual meeting of the American Association for the History of Medicine was held in Montreal, Canada, May 3-6, 1972. Sessions were held at the Queen Elizabeth Hotel and in the McIntyre Medical Sciences Building of McGill University which graciously made its facilities available to the Association. To the University, the members of the Program Committee, and the Committee on Local Arrangements, the Association wishes to extend its sincere appreciation.

This report, which includes abstracts of the minutes of the Council and Business Meetings, and financial report, is presented for the information of the members. The official minutes and full financial report are preserved in the office of the Secretary-Treasurer and may be examined by any member upon request.

PROGRAM

WEDNESDAY, MAY 3

7:00 p. m. Reception, Salon St. Laurent, Queen Elizabeth Hotel

THURSDAY, MAY 4

9:00 a. m. General Session, Salon Joliet, Queen Elizabeth Hotel

Gert Brieger, *presiding*

Women, Menstruation, and the 19th Century American Physician

Vern Bullough and Martha Voght

Tracadie and Penikese: A Comparative Historical Analysis of the Societal Response to Leprosy in New Brunswick (1844-1880) and Massachusetts (1904-1921)

Philip Kalisch

The New Orleans Yellow Fever Epidemic in 1878: A Critical Evaluation of Sources for the History of Medicine and Public Health

John Ellis

Harvey Young, *presiding*

The Development of the Medical Profession in a Frontier Economy: Rochester, New York (1812-1860)

Edward Atwater

The Making of an Eclectic Physician: Joseph M. McElhinney and the Eclectic Medical Institution of Cincinnati

Ronald Numbers

An Analysis of Change in a 19th Century Hospital: A Case Study in Quantitative Techniques

Thomas May

12:30 Council Luncheon Meeting, Studio 350, Queen Elizabeth Hotel

2:00 p. m. General Session, Salon Joliet, Queen Elizabeth Hotel

Lloyd Stevenson, *presiding*

The Folk Practice of Gynecology and Obstetrics in the Middle Ages

Lucille Pinto

Science and Metaphor in the Medicine of Restoration England

Peter Niebyl

The Hospice of the Paris College of Surgery (1774-1793)—“A unique and precious institution”

Toby Gelfand

4:00 p. m. Fielding H. Garrison Lecture, Salon Joliet, Queen Elizabeth Hotel

Whitfield J. Bell, Jr., *presiding*

The Position of the Physician in Muslim Society

Franz Rosenthal

FRIDAY, MAY 5, 1972

9:15 a. m. Symposium, Martin Theatre, McIntyre Medical Sciences Building, McGill University

The Implications of Current Trends in Medical Education for the Teaching of Medical History

Saul Benison, *presiding*

History in Medical Education: the Development of Current Trends in the United States

Chester Burns

“John Hunter—Enlightened Empiricist” ; An Historical Film as a Teaching Aid

Thomas Forbes

The Social History of Medicine—An Answer?

Nicholas Dewey

Living with the Curricular Crush: A Case Study

Robert Hudson

Summation and Commentary

Edmund Pellegrino

2:00 p. m. General Session, Salon Joliet, Queen Elizabeth Hotel

James Cassedy, *presiding*

William Williams Keen: A Reappraisal

Erik Erikson

Dutrochet's Early Experiments in General Physiology

John Pickstone

Student Activists in Medicine

Anthony Bottone

Lester King, *presiding**Recognition of Sex-related Predilection to Diseases*

Thomas Benedek

John Brown, Joseph Frank, and the Rejection of Medical Systems

Ramunas Kondratas

*African Fever, Prophylactic Quinine, and Statistical Analysis:**Factors in the European Penetration of a Hostile West African Environment*

Dennis Carlson

7:30 p.m. Annual Banquet, Salon Marquette, Queen Elizabeth Hotel

President's Address

Joseph M. Toner, American Medical Historian

Whitfield J. Bell, Jr.

SATURDAY, MAY 6, 1972

9:00 a.m. General Session, Salon Joliet, Queen Elizabeth Hotel

Ernst Stieb, *presiding**The Foxglove Comes to America*

J. Worth Estes

Attitudes to the Use and Abuse of Opiates in Mid-19th-Century England

Elizabeth Lomax

Comparisons and Contrasts between the Early Arsphenamine and Early Antibiotic Periods

Harry Dowling

10:45 a.m. Business Meeting, Salon Joliet, Queen Elizabeth Hotel

Whitfield J. Bell, Jr., *presiding*

(Results of questionnaire on the format of future meetings to be discussed).

MINUTES

COUNCIL

The annual meeting of the Council of the American Association for the History of Medicine, Inc., was held at the Queen Elizabeth Hotel, Montreal, Canada, at 12:45 p.m. on May 4, 1972. Whitfield J. Bell, Jr., President of the Association, served as Chairman, and Genevieve Miller served as Secretary-Treasurer.



The following members of the Council were present: Whitfield J. Bell, Jr., Eric T. Carlson, James H. Cassedy, G. E. Erikson, Jane M. Oppenheimer, Saul Benison, C. Lilian Temkin, Robert P. Hudson, Irving A. Beck, Joseph H. Kiefer, Peter D. Olch, John B. Blake, Saul Jarcho, and Genevieve Miller.

The minutes of the previous meeting, as printed in the January-February, 1972, issue of the *Bulletin of the History of Medicine* (pp. 19-20) were approved.

The Secretary-Treasurer presented the Financial Report for the Fiscal Year 1970/71 ending 31 October 1971, which was approved for presentation to the members. She presented a budget for the coming fiscal year 1972/73 with suggested increases in the value of awards, which was approved (copy appended). The Council voted to award the recipient of the William Osler Medal a \$200 honorarium in addition to the medal, and to compensate him up to \$200 for traveling expenses to attend the annual meeting at which the award is given. The Council also voted to increase the Garrison Lecture honorarium from \$200 to \$500 plus traveling expenses up to \$500 to attend the annual meeting at which the Lecture is delivered. No change was made in the Welch Medal award. The Council voted to authorize these changes to include the 1972 Osler Medal winner and the 1972 Garrison Lecturer.

The Council accepted the report of the Welch Medal Committee which recommended the award to Professor Erwin H. Ackerknecht for his book on *Medicine at the Paris Hospital, 1794-1848*, published by the Johns Hopkins Press in 1967. The Council voted unanimously to award the Welch Medal to Professor Ackerknecht and instructed the Secretary-Treasurer to send a cablegram to him in Zürich.

The Osler Medal Committee recommended that the Osler Medal be awarded to Theron Young, a medical student at McGill University, for his essay on "American Medical Missionaries in China in the 19th Century." Second place went to H. Tristram Englehardt, Jr., of Tulane and third place to Lloyd Alan Wells of the University of Rochester and Mr. James Philip Morgan of the University of Cincinnati. The Committee recommended that all four papers be considered for publication in the *Bulletin of the History of Medicine*. The Council approved the report. It also decided that in the future the Council approval of the Osler Medal award should be obtained by mail ballot so that the medal could be inscribed in time to be presented to the winner at the Annual Meeting. The suggestion was made that the winning paper might also be included in the program.

The President announced that the Garrison Lecture Committee had selected Genevieve Miller as the Garrison Lecturer for 1973. He appointed Leonard G. Wilson chairman of the 1974 Garrison Lecture Committee which includes George Rosen and Morris H. Saffron.

The report of the Editorial Committee was approved and followed by a discussion concerning misinformation in the Preliminary Announcement for the Montreal meeting to the effect that participants are *required* to submit their papers to the *Bulletin*. While it is customary for papers read at the meeting to be submitted for the consideration of the Editorial Committee of the Association, it is not mandatory. Papers which had already been presented elsewhere should not be accepted by the Program Committee.

The Council approved a proposed amendment to the Bylaws which would simplify the procedure of admitting new members to the Association. The motion was carried that the amendment be recommended to the membership. Upon the Secretary-Treasurer's suggestion of a new category of Family Membership, the President appointed a committee composed of John Blake, Lilian Temkin and Genevieve Miller to study the dues structure and present their recommendation to the membership at the Annual Meeting.

Acting upon the suggestion of Dr. Owsei Temkin, the Council voted to recommend to the membership the nomination of Richard Rudolf Walzer, Ph. D., F. B. A. of Oxford, England, as an Honorary Member of the Association.

The Council voted to recommend to the membership that the American Association for the History of Medicine should again endorse the election of Dr. William Henry Welch to the Hall of Fame for Great Americans at New York University in the election to be held in April 1973.

The Council discussed the proposal of Drs. W. Robert Penman and Dorothy I. Lansing to create a "Shryock Award for longer and more comprehensive papers than are allowed in the Osler Medal Competition." While applauding them for their interest and generosity, the Council opined that the proposal needed additional study and that possibly a publication fund might be established to honor Dr. Shryock which would make possible the publication of essays too long for the *Bulletin*. The officers were instructed to confer with the Penmans.

A proposed award by Zeitlin & Ver Brugge of \$250 for the "best scholarly article written in English and published during the preceding calendar year on some area of the history of medicine or related discipline" was discussed. The Council declined with thanks, indicating that the selection procedure for such an award would be very time consuming and difficult, as had previously been experienced with the discontinued Hafner award.

The Council approved the President's appointment of the following delegates and alternates to the International Society of the History of Medicine, meeting in London, September 2-9, 1972:

United States

George W. Corner, *Delegate*
Genevieve Miller, *Alternate*

Canada

William C. Gibson, *Delegate*
William Feindel, *Alternate*

The letter of Guenter B. Risse circulated previously to Council members was discussed. His proposal that the Association establish closer ties with the American College of Physicians by meeting with it in alternate years was viewed negatively. The Council felt that becoming tied with any other organization on a fixed basis would destroy the distinctive quality judged to be one of the good characteristics of the Association. (This opinion was later reinforced by the results of Donald G. Bates's questionnaire.) The Council suggested that Dr. Risse might organize a historical session as part of the annual meeting of the American College of Physicians.

In order to stem the drift of medical practitioners away from the Association, Robert P. Hudson proposed that the Association sponsor a post-graduate course

before or after the Annual Meeting, with a program worked out by the Association and the local medical history society. The Council recommended that the new President should appoint a committee to look into the matter and make a recommendation in the 1973 Council meeting.

The Secretary-Treasurer raised the question of eligibility of attendance at annual meetings. The Council decided that non-members are welcome to attend provided that they pay the local registration fees, while local students and members of the local arrangements committees may attend without paying for registration.

The question of whether the Association should join the Council of Academic Societies was discussed. Peter D. Olch was instructed to make further inquiry and report to the officers. A mail vote by the Council would be taken on any proposed action.

The President announced the appointment of Peter D. Olch as Chairman of the Program Committee for the 1973 Annual Meeting in Cincinnati on May 3-5, 1973 at the Terrace Hilton Hotel.* Saul Benison was named Chairman of Local Arrangements. The group counseled against the solicitation of outside funds to support meetings.

Future meetings will be held at Charleston, S. C. (Ft. Sumter Hotel) in 1974 and Philadelphia (Benjamin Franklin Hotel) on May 1-3, 1975, the fiftieth anniversary of the Association. No decision was reached about the 1976 meeting place, invitations having been received from Portland, Oregon, and Houston-Galveston, Texas. An invitation came from Robert P. Hudson to hold the 1977 meeting in Kansas City.

The Secretary-Treasurer announced the arrangement of an affinity group flight with the American Express Company and Pan American to transport Association members who will be attending the XXIII International Congress of the History of Medicine in London, September 2-9, 1972. If 40 members and their families sign up, the round trip fare will be \$234 for Boston/London/New York flights.

The Council meeting adjourned at 3 p.m.

Genevieve Miller, *Secretary-Treasurer*

BUSINESS MEETING

The Annual Meeting of the American Association for the History of Medicine, Inc., was held in the Queen Elizabeth Hotel, Montreal, Canada, on May 6, 1972. Whitfield J. Bell, Jr., President of the Association, served as Chairman, and Genevieve Miller as Secretary-Treasurer.

The President called the meeting to order at 10:45 a.m. The minutes of the previous meeting, as printed in the January-February 1972 issue of the *Bulletin of the History of Medicine* (pp. 21-24) were approved.

The President read the names of members who had died since the previous meeting and asked those present to rise for a moment of silence. The deceased were:

*The headquarters hotel subsequently was changed to Stouffer's Inn.

Alexander T. Bunts
Charles C. Dennie
Martin Levey
William M. Loehr
Simon Meleck
Richard H. Shryock
T. C. Terrell

The President then called upon Dr. Saul Jarcho who presented the following statement:

RICHARD H. SHRYOCK

Richard H. Shryock served the learned world as professor in leading universities; not least among these is the Johns Hopkins University, where he headed the Institute of the History of Medicine. Dr. Shryock served both the learned world and the American Association for the History of Medicine as president of the Association, as recipient of the Welch Medal and—during the last annual meeting which he attended, that held in 1970 in Birmingham—as Garrison Lecturer. He was not only a distinguished historian of medicine, who clarified important aspects of American medical and paramedical practice, but he may be said with full justice to have done more than most scholars of his generation to acquaint both physicians and general practitioners of American historiography with the significance of medical factors in society. He bequeathed to us a long list of instructive writings, many of which are studded with brilliant perceptions and insight. He enriched us also with his friendship and with his encouragement. He showed that learning can be large without being graceless or pompous.

By this memorial statement the Association desires once again to demonstrate its affection for Dr. Shryock, and directs that a copy of the present resolution be sent to Dr. Shryock's family.

The Association voted to adopt Dr. Jarcho's resolution.

The Secretary-Treasurer presented a summary of the Financial Report for the Fiscal Year 1970/71, and the Auditors reported that the books were in order. The Association voted to accept and approve the reports.

The report of the Nominating Committee was presented by its chairman, Frank B. Rogers. On motion from the floor, the proposed slate was elected unanimously as follows:

President (2 years)	John B. Blake
Vice-President (2 years)	Lester S. King
Council Members (3 years)	Chester R. Burns
	William C. Gibson
	Martha Teach Gnudi
	Stanley W. Jackson

Upon the motion of Owsei Temkin and the recommendation of the Council, the name of Richard Rudolph Walzer of Oxford was presented for election to honorary

membership in the Association. He was elected unanimously, and the Secretary-Treasurer was instructed to prepare a certificate to send to him.

Upon the recommendation of the Council the members voted unanimously to amend the Bylaws as follows:

Article II: Membership

Section 2: Any resident of the United States of America, its territories and possessions, or Canada who is interested in the history of medicine shall be eligible for Active Membership upon [nomination in writing by an Active Member and election by the Membership Committee.] Eliminate bracketed passage and substitute:

...submitting an application to the Secretary and acceptance thereof by one or more of the officers.

Section 3: (This pertains to Nonresident Membership and reads as above.) Eliminate bracketed material and substitute:

...submitting an application to the Secretary and acceptance thereof by one or more of the officers. Nonresident Members shall not be entitled to vote at the annual or other meetings.

The President read a proposal stemming from Council discussion and committee recommendation that a new class of Family Membership be incorporated into the Association's dues structure. The members voted unanimously that when both husband and wife wish to be Active Members of the Association, their combined dues will be \$20.00 and they will receive one subscription to the *Bulletin of the History of Medicine*.

The President announced the appointment of the Delegates and Alternates to the International Society of the History of Medicine for the next two years (see Council Minutes).

Upon recommendation of the Council the members voted to reindorse Dr. William Henry Welch's nomination to the Hall of Fame for Great Americans at New York University, in the election to be held in April 1973. In 1965 the Association had passed a resolution to this effect which was published in the *Bulletin of the History of Medicine* (1966, 40: 64-65). The Secretary-Treasurer was instructed to communicate the Association's resolution to the Electors in January 1973.

The President announced the affinity group flight to London on September 2 and the dates of future meetings (see Council Minutes). Dr. John C. Brougher repeated the invitation, made first in May 1970, to have the 1976 meeting of the Association in Portland, Oregon.

Dr. Ilza Veith proposed that the Association consider having a second publication to include the Association reports and papers, since at present the *Bulletin* is far behind in the publication of articles submitted to it. Dr. Lester King moved that Dr. Veith's suggestion be made in writing and submitted to the Council for its consideration. Mrs. Janet B. Koudelka, Assistant Editor of the *Bulletin*, reported on the papers currently being published.

Upon the motion of James Harvey Young, the Association passed a resolution of great gratitude to Ellen B. Wells and the other members of the Local Arrange-

ments Committee for the comfortable physical arrangements which made it possible to enjoy even more fully the stimulating intellectual fare of Dr. Donald G. Bates and the members of the Program Committee.

Dr. Bell turned the meeting over to Dr. John B. Blake, the newly elected President, who entertained a resolution to thank Dr. Bell for his gracious urbane leadership during the past two years.

The remainder of the meeting was devoted to a report by Dr. Donald G. Bates on the questionnaire concerning future Association meetings.

The meeting adjourned at 12 noon.

Genevieve Miller, *Secretary-Treasurer*

COMMITTEE CHAIRMEN, 1972-1973

Nominating Committee: Frank B. Rogers, M. D.

Editorial Committee: Lloyd G. Stevenson, M. D.

Program Committee: Peter D. Olch, M. D.

Local Arrangements Committee: Saul Benison, Ph. D.

Garrison Lecture Committee: Leonard G. Wilson, Ph. D.

Welch Medal Committee: John Duffy, Ph. D.

Osler Medal Committee: Warner L. Wells, M. D.

Semi-Centennial Committee: Whitfield J. Bell, Jr., Ph. D.

FINANCIAL REPORT ON THE FISCAL YEAR 1970/71

Ending 31 October 1971

CLASSIFIED STATEMENT OF RECEIPTS AND EXPENDITURES

1 November 1970-31 October 1971

GENERAL FUND

RECEIPTS:

Dues

Regular Members	\$7290.38
Contributing Members	555.00
Non-Resident Members	190.00
Non-Resident Contributing	15.00
Constituent Societies	230.00
Sustaining Constituent Society	50.00
Back dues	60.00
Advance dues	20.00
Unclassified	25.00
	\$ 8435.38

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Address list	\$ 180.00
Refund from Johns Hopkins Press	214.67
Return of U. of Washington deposit	200.00
Transfer from savings	33.84
Total receipts 1970/71	<u>\$ 9063.89</u>
Balance 1 November 1970	8047.97
	<u>\$17111.86</u>

EXPENDITURES:

Subscriptions	\$ 7277.33
Administrative expenses	777.02
Honors and Awards	524.37
Transfer of H. R. Viets Bequest to separate fund	1010.11
	<u>\$ 9588.83</u>
Balance 31 October 1971	7523.03
	<u>\$17111.86</u>

AMERICAN ASSOCIATION FOR THE HISTORY OF MEDICINE, INC.

PRESIDENT'S DISCRETIONARY FUND

RECEIPTS:

Interest	3.54
Balance 1 November 1970	157.25
	<u>\$ 160.79</u>

EXPENDITURES:

Gift to retiring Associate Editor	33.84
Balance 31 October 1971	126.95
	<u>\$ 160.79</u>

ANNUAL MEETING FUND *

RECEIPTS:

Balance from Colorado Springs Meeting	39.66
Balance 1 November 1970	896.38
	<u>\$ 936.04</u>

EXPENDITURES:

Printing-Montreal Meeting	14.20
Balance 31 October 1971	921.84
	<u>\$ 936.04</u>

* Account of 1971 Colorado Springs Meeting kept locally. See attached schedule.

HENRY R. VIETS BEQUEST

RECEIPTS:

Transferred from General Fund	\$ 1,010.11
Balance 1 November 1970	0.00
	<u>\$ 1,010.11</u>

EXPENDITURES:

	0.00
Balance 31 October 1971	1,010.11
	<u>\$ 1,010.11</u>

AMERICAN ASSOCIATION FOR THE HISTORY OF MEDICINE, INC.

44th Annual Meeting, Colorado Springs, 1971

RECEIPTS:

Opening deposit F. B. Rogers	\$ 100.00
Technical Literature Exhibits	660.00
Zeitlin & VerBrugge	201.12
Registrations 143 @ 6.00	858.00
Banquet 149 @ 8.00	1192.00
Tours 30 @ 4.00	120.00
Cash bar 207 @ 1.00	207.00
	<u>\$ 3338.12</u>

EXPENSES:

Bank expense (printing checks)	\$ 6.32
Printing program (Knudsen)	660.00
Marshall Sprague	100.00
Refund Morris	14.00
Refund Zeitlin	14.00
Refund 5 tours	20.00
Tour expense (Colo. Sprgs. Coach)	73.50
Bank expense (Canadian charges)	1.39
Univ. Colo. Med. Center-Postage, etc.	117.60
The Broadmoor	2170.65
Printing tickets & menu (Joyce)	21.00
Refund Rogers deposit	100.00
	<u>3298.46</u>
REMAINING:	<u>\$ 39.66</u>

STATEMENT OF BALANCE

31 October 1970

ASSETS:

Cash on hand	\$9,101.60	
On deposit, U. of Wash.	200.00	
		<u>\$ 9,301.60</u>

LIABILITIES:

None

NET WORTH:

General Fund	8,047.97	
President's Fund	157.25	
Annual Meeting Fund	896.38	
On deposit, U. of Wash.	200.00	
		<u>\$ 9,301.60</u>

31 October 1971

ASSETS:

Cash in Bank-		
Operating Fund	\$ 614.41	
Cash in Operating Savings		
Acct.-Continental Bank	3,967.52	
Operating Fund		
5% Savings Acct.-		
Continental Bank	5,000.00	
		<u>\$ 9,581.93</u>

LIABILITIES:

None

NET WORTH:

General Fund	7,523.03	
President's Fund	126.95	
Annual Meeting Fund	921.84	
Henry R. Viets Bequest	1,010.11	
		<u>9,581.93</u>

PROPOSED BUDGET 1972/73

RECEIPTS:

Membership dues (950)	\$14,250.00	
Address list	200.00	
Annual Meeting	4,000.00	
		<u>\$18,450.00</u>

EXPENDITURES:

Subscriptions to <i>Bulletin of the History of Medicine</i> (950)	9,500.00	
Administration	2,000.00	
Directory	750.00	
Annual Meeting	4,000.00	
Honors and Awards		
Garrison Lecture Honorarium	500.00	
Garrison Lecture travel expenses	500.00	
Osler Medal Honorarium	200.00	
Osler Medal travel expenses	200.00	
Committee expenses, costs of medals,, certificates, etc.	400.00	
Miscellaneous	400.00	
		<u>\$18,450.00</u>

NEW REGULAR MEMBERS

1 November 1970 - 31 October 1971

Iftikharul Hague Abbasy, M. D. Elmhurst, Illinois	W. S. Curran, M. D. Albuquerque, New Mexico
Gonzalo E. Aponte, M. D. Philadelphia, Penna.	Jane B. Donegan Syracuse, New York
Edward C. Atwater, M. D. Rochester, N. Y.	Richard M. Engelman, M. D. New York, N. Y.
Bruce William Branson Loma Linda, Calif.	Harrison Evans, M. D. Loma Linda, Calif.
Thomas C. Cadwallader, Ph. D. Terre Haute, Indiana	Ronald S. Fishman, M. D. Washington, D. C.
Thomas J. Chilis Chicago, Illinois	Fred E. Gilbert, M. D. Stone Mountain, Georgia
Miss Helen Crawford Madison, Wisconsin	Sidney R. Govons, M. D. Lansing, Michigan

Donald A. Harvey, M. D.
Omaha, Neb.

Steven D. Helgersen, M. A.
Federal Way, Washington

John Thomas Hopkins
Lexington, Massachusetts

Thomas J. Huth, M. D.
Fort Mitchell, Kentucky

Jack Irvine, M. D.
San Francisco, Calif.

Carl Jelenko, III, M. D.
Augusta, Georgia

Richard Jonas Kahn, M. D.
South Portland, Maine

Jack D. Key
Rochester, Minn.

John C. Kramer, M. D.
Orange, Calif.

Lawrence D. Longo, M. D.
Loma Linda, Calif.

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AMERICAN DOCTORS AND THE PARISIAN MEDICAL WORLD, 1830-1840

RUSSELL M. JONES *

From colonial times to the first World War some American doctors went to Europe to further their professional education then, upon returning home, diffused what they had learned abroad to the medical culture of the United States. In the seventeenth century students, especially from the middle colonies, went to Leyden.¹ Later, down to the end of the Napoleonic wars, London and, to a greater extent, Edinburgh attracted others.² After the Civil War, especially in the 1870s and 1880s, still another and by far the most numerous wave of medical argonauts studied in Vienna and at universities in Germany and in Switzerland.³ Historians of American medicine conventionally designate as the "Leyden or Dutch," "British," and "German" the periods when these European medical centers attracted American students and, through them, influenced medicine in this country.

For these reasons the four decades from around 1820 to 1861 have been called the "French" or "Paris period."⁴ During these years

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¹ Francis R. Packard, *History of Medicine in the United States*, 2d ed (New York: Hoeber, 1931), 2 vols., II, ch. 13: "Foreign influences in American medicine." See also J. J. Walsh, *History of Medicine in New York* (New York, 1919), 5 vols., I, ch. I, *passim*.

² Packard, *op. cit.* See also his "How London and Edinburgh influenced medicine in Philadelphia in the eighteenth century," *Ann. Med. Hist.*, 1932, n.s. 4: 210-244; Samuel Lewis, "List of the American graduates in medicine at the University of Edinburgh from 1705 to 1866 with their theses," *New England Hist. Geneal. Reg.*, 1888, 42: 159-165; J. G. Wilson, "The influence of Edinburgh on American medicine in the 18th century," *Proc. Inst. Med. Chicago*, 1929, 7: 129-138; Whitfield J. Bell, Jr., "Some American students of 'that shining oracle of physic,' Dr. William Cullen of Edinburgh," *Proc. Am. Phil. Soc.*, 1950, 94: 275-281.

³ Thomas N. Bonner, *American Doctors and German Universities. A chapter in international intellectual relations, 1870-1914* (Lincoln: Univ. of Nebraska Press, 1963). Bonner estimated 15,000 between 1870 and 1914. Cf. p. 23.

⁴ Richard H. Shryock, *American Medical Research Past and Present* (New York: Commonwealth Fund, 1947), p. 9. See also his "The advent of modern medicine in Philadelphia, 1800-1850," *Yale J. Biol. Med.*, 1941, 13: 726-734.

American medical men continued to visit and to study in London and in Edinburgh. In the 1830s and 1840s a few were drawn to Dublin by the teaching of Stokes and Graves at the Rotunda Hospital.⁵ By the 1850s the migration to Vienna had begun. Yet for most Paris was the "medical mecca."⁶ Nearly seven hundred spent some time there when the French capital's reputation as a center for medical study stood highest in the Atlantic world.

Individually and collectively these Americans forged a living link between the Parisian medical world with its famous clinicians and surgeons, its hospitals, clinics, dissecting rooms, private courses, free lectures, medical controversies, specialties, instrument makers, and book-sellers, and their own country's emerging medical culture. They attended the famous and numerous "official" and "free" clinics following the renowned doctors through the wards, observing cases at the bedside, practicing with the stethoscope, listening to the diagnoses, witnessing treatments, operations, and post-mortem dissections. They learned to identify diseases, improved their skill with the stethoscope, acquired practical knowledge of obstetrics and of human anatomy. They attended lectures on medical subjects at the Faculté de Médecine and on the natural sciences at the Collège de France, Jardin des Plantes, and the Sorbonne. They engaged in medical controversies, formed opinions of, and friendship with French medical notables, and bought books, instruments, and specimens. Through their practice, teaching, writings, and research they disseminated what they had learned in Paris to their colleagues, students, and patients at home. For whatever influence French medical science and practice had in the United States before the Civil War they were, in a large measure, responsible. Thus these doctors, like their countrymen who earlier and later studied elsewhere, played an indispensable part in the transatlantic diffusion of European medicine.

Aspects of the "Paris period" have been examined. Sir William Osler,⁷ followed by Steiner⁸ and Hinsdale⁹ identified some of Pierre

⁵ David Riesman, "The Dublin medical school and its influence upon medicine in America," *Ann. Med. Hist.*, 1922, 4: 86-89

⁶ The phrase is Shyrock's. See his *Medicine and Society in America, 1660-1860* (New York: New York Univ. Press, 1960), p. 127.

⁷ William Osler, "Influence of Louis on American medicine," *Johns Hopk. Hosp. Bull.*, 1897, 8: 161-167. The essay was reprinted in Osler's *An Alabama Student and Other Biographical Essays* (London, 1908).

⁸ Walter R. Steiner, "Dr. Pierre Charles Alexandre Louis, a distinguished Parisian teacher of American medical students," *Ann. Med. Hist.*, 1940, 2: 451-460.

⁹ Guy Hinsdale, "The American medical argonauts. Pupils of Pierre Charles

Charles Alexandre Louis's American students in Paris in the 1830s and indicated how some of them spread their French teacher's methods and reputation in the United States. But this much cited paper on Louis's influence on American medicine has serious flaws. Osler's list of students is only for the 1830s and is incomplete even for that decade. He named thirty-eight; the present writer has identified 222. His roster, moreover, included none of the many medical students from New Orleans. Not all of the men Osler identified were either students or disciples of Louis. Both John Collins Warren and Valentine Mott, for example, had already established reputations as surgeons at home and in France before going to Paris and neither followed regularly Louis's *clinique*.¹⁰ Finally Osler generalized from examples of Louis's admirers such as James Jackson, Jr., William Wood Gerhard, and Elisha Bartlett and thus tended to equate French influence with Louis's teachings. He ignored, moreover, other aspects of the Parisian medical world, notably surgery and the specialties like ophthalmology and venereology that also impressed Americans.

Still Osler's charming essays on some of the Americans who studied medicine in Paris are valuable early contributions to knowledge of the "Paris period."¹¹ He uncovered, relied upon, and quoted from his subjects' unpublished letters. More recently other such manuscripts have been edited and published¹² so that now a history of the "Paris period"

Alexandre Louis," *Trans. Coll. Physicians Philad.*, 1945, 4th ser., 13: 39-42.

¹⁰ See John Collins Warren mss letter from Paris dated December 1837 (Boston: The Massachusetts Historical Society), hereafter cited as JCW, and Valentine Mott, mss letters from Paris dated August 15 and September 17, 1837 (The New York Academy of Medicine), cited as Mott. Also Mott, *Travels in Europe and the East* (New York, 1842), pp. 33-57.

¹¹ See the essays on Bartlett, Gerhard, John Young Bassett, and Alfred Stillé in *An Alabama Student*.

¹² Russell M. Jones, "An American medical student in Paris, 1831-1833," *Harvard Library Bull.*, 1967, 15: 59-81 (James Jackson Jr.); John Rührhah, "Willard Parker," *Ann. Med. Hist.*, 1933, n. s. 5: 205-214, 376-389, 458-483; George Rosen, "An American Doctor in Paris in 1828. Selections from the diary of Peter Solomon Townsend, M. D.," *J. Hist. Med.*, 1951, 6: 64-115, 209-252; Joseph I. Waring, *A History of Medicine in South Carolina, 1825-1900* (Columbia, S.C.: South Carolina Medical Ass., 1968), p. 90 (extract from letter of Peter Porcher from Paris dated February 27, 1837); also Waring's "William Middleton Michel in Paris, 1842-1846. A vignette of Cruveilhier," *J. Hist. Med.*, 1968, 23: 349-355; Philip D. Jordan, "A naval surgeon in Paris, 1835-1836," *Ann. Med. Hist.*, 1940, 3rd. ser., 2: 526-536; 3: 73-81, 148-164 (Lewis A. Wolfley), hereafter cited as Wolfley; George E. Gifford, Jr., "Twelve letters from Jeffries Wyman, M. D.," *J. Hist. Med.*, 1965, 20: 306-333, and "An American in Paris, 1841-1842: Four letters from Jeffries Wyman," *J. Hist. Med.*, 1967, 22: 279-285.

can be attempted on a broader scale than merely summarizing the experiences of a handful of Louis's admirers. The present writer, for example, has identified 616 American doctors who studied in Paris between 1820 and 1861, drawn a "statistical profile" of them, and compiled a bibliography of some of their accounts, both published and unpublished, of their medical experiences.¹³ Since that article appeared, further research at the archives of the Faculté de Médecine in Paris has yielded the names of other American doctors¹⁴ thus raising to 677 those whose presence in the city in these years has been established.

Without attempting to determine who went to Paris and what they learned there, R. H. Shryock and E. H. Ackerknecht have related some of the ways French medical ideas spread to the United States. Shryock showed that in Philadelphia, at least, certain "leaders of the profession" such as Samuel Jackson, Nathaniel Chapman, and John Godman, while not visiting Paris themselves, became in the 1820s increasingly receptive to the French anatomical-clinical approach to disease as they grew dissatisfied with the theories of Hosack and Rush. These men, argued Shryock, drew the attention of their colleagues and students to the work of the Parisian clinicians and thus ". . . it was only after the Americans had pretty well taken over French views in principle that they themselves began the hegira to Paris."¹⁵ Shryock, however, ignored the part played by those who studied in Paris in the 1820s in changing the attitudes of the Philadelphia medical community toward French medicine. One hundred and five American doctors went to France in this period. Among them were such prominent Philadelphians as William Ashmead, an externe at the Hôtel Dieu for two years then a surgeon at Blockley for five,¹⁶ William Darrach who studied in Paris for three years,¹⁷ William

¹³ Russell M. Jones, "American doctors in Paris, 1820-18 1: A statistical profile," *J. Hist. Med.*, 1970, 25: 143-157.

¹⁴ The *Registres des inscriptions* of the Faculté were reported "lost" when the present writer researched in Paris in 1963-1964. They were "found" in 1965. The author consulted those for 1820-1839 (*Registres* after this date are still missing) in the summer of 1970. The statistical profile presented in this paper incorporates research done since the paper cited in footnote #13 was published.

¹⁵ Shryock, "Advent of modern medicine," p. 732.

¹⁶ William Biddle Atkinson, ed. *The Physicians and Surgeons of the United States* (Philadelphia, 1878), pp. 229-230; Files of the Alumni (Mss) (Philadelphia, University of Pennsylvania Archives) hereafter cited as File of Alumni.

¹⁷ Howard A. Kelly and Walter L. Burrage, eds. *American Medical Biographies* (Baltimore: Norman Remington, 1920), p. 285, hereafter cited as K-B; William Frederick Norwood, *Medical Education in the United States before the Civil War* (Philadelphia: Univ. of Pennsylvania Press, 1944), p. 95, note #4; Packard, "Foreign

Edmonds Horner whose important textbook was published in 1829,¹⁸ René LaRoche whose balanced and informed accounts of French practice and theory appeared in the two leading Philadelphia medical journals,¹⁹ and Samuel George Morton.²⁰ One may conclude that these men with their firsthand experience of the Parisian medical world had something to do with disseminating French medicine in Philadelphia and thus stimulating some of their colleagues to go to France in the 1830s.

Although not a Philadelphian, Elisha Bartlett, Osler's "Rhode Island Philosopher" studied in Paris in the 1820s. Upon his return home he probably did as much as any individual in acquainting his countrymen with Parisian medical notables, the opportunities the city furnished the medical student, and the working principles of the "Paris school" of clinicians.²¹ While he did not examine the impact of the book on American medical thought, E. H. Ackerknecht showed how Bartlett's 1844 *Essay on the Philosophy of Medical Science* formulated for and recommended to American readers the empiricism of the Parisian clinicians.²²

Despite this valuable research and the accumulation of firsthand accounts of the Parisian medical world²³ neither the 1830s nor the entire "French period" has been the subject of a study similar to T. N. Bonner's on the "German period."²⁴ This essay focuses upon only one decade in the French period, but it presents a thematic framework applicable to the entire forty years. First it draws a collective portrait of the 222 American doctors who visited Paris in the 1830s. Then it offers a general explanation of why they went there in which some of the doctors express in their own words their impressions of Parisian medical facilities,

influences," p. 1017; Harold J. Abrahams, *Extinct Medical Schools of Nineteenth-Century Philadelphia* (Philadelphia: Univ. of Pennsylvania Press 1966), p. 48, note #11; File of Alumni.

¹⁸ K-B, pp. 555-558; Richard French Stone, ed. *Biography of Eminent American Physicians and Surgeons* (Indianapolis, 1894), pp. 222-223; Samuel D. Gross, *Lives of Eminent American Physicians and Surgeons of the Nineteenth Century* (Philadelphia, 1861), pp. 697-721.

¹⁹ *Dictionary of American Biography* 1933, 11: 3-4; K-B, pp. 680-681; File of Alumni.

²⁰ Stone, *Biography*, pp. 337-345; Gross, *Lives*, pp. 582-604; K-B, pp. 822-825; DAB, 1934, 13: 265-266; File of Alumni.

²¹ For information on Bartlett see the chapter in Osler's *An Alabama Student*; Packard, "Foreign influences," pp. 1023-1024; DAB, (1929), II, 3-5; Gross, *Lives*, pp. 732-756.

²² Erwin H. Ackerknecht, "Elisha Bartlett and the philosophy of the Paris clinical school," *Bull. Hist. Med.*, 1950, 24: 43-60.

²³ See the sources, both published and unpublished, listed in Jones, "American doctors in Paris."

²⁴ See Shryock's review of Bonner's book in *J. Hist. Med.*, 1964 19: 309-310.

personalities, and teaching. Next it reconstructs the way these doctors went about acquiring a professional education. Finally the paper tells what some medical argonauts conveyed to the United States and by what means.

I.

From biographical information compiled on many of the American doctors who visited Paris in the 1830s the following group portrait can be drawn.

Some, like John Collins Warren²⁵ and Jacob Bigelow²⁶ of Boston; George Frick²⁷ of Baltimore; Valentine Mott,²⁸ Alexander H. Stevens,²⁹ and Willard Parker³⁰ of New York; Richard Harlan³¹ of Philadelphia; Charles A. Luzenberg³² of New Orleans; Josiah Clark Nott³³ of South Carolina; John Young Bassett³⁴ of Alabama; and Benjamin Dudley³⁵ of Kentucky, were experienced practitioners who had already established reputations at home before taking a kind of medical tour of the continent. Indeed, Dudley and Warren revisited scenes of their medical studies thirty years earlier. But the overwhelming majority were younger men who upon obtaining their medical degrees in the United States went to Europe, particularly to Paris, for one or two years of practical experience.

²⁵ Rhoda Truax, *The Doctors Warren of Boston* (Boston: Houghton, Mifflin, 1968), Book III; DAB, 1936, 19: 480-481; Gross, *Lives*, pp. 796-814; K-B, pp. 1196-1197.

²⁶ Thomas F. Harrington, *The Harvard Medical School, 1782-1905* (New York-Chicago, 1905), 3 vols., II, 705-716.

²⁷ K-B, p. 414; Packard, "Foreign influences," p. 1015; Alvin A. Hubbell, *The Development of Ophthalmology in America, 1800-1870* (Chicago: A. M. A. 1908), pp. 33-34, 40, 43, 96-98.

²⁸ K-B, pp. 827-829; Walsh, *Medicine in New York*, I, 167-171; Hugh H. Toland, "The life and character of the late Valentine Mott, M.D.," *Pacific Med. Surg. J. & Med. Press*, 1865-1866, 8: 163-174.

²⁹ K-B, pp. 1098-1099; Walsh, *op. cit.*, I, 171-172, IV, 5-6; DAB, 1935, 17: 605-606.

³⁰ Stone, *Biography*, pp. 370-372; Atkinson, *Physicians and Surgeons of the U.S.*, pp. 482-483; K-B, pp. 883-884; DAB, 1934, 14: 242-243; Harrington, *Harvard Medical School*, II, 735-738.

³¹ K-B, p. 492; DAB, 1932, 8: 273-274.

³² Stone, *Biography*, pp. 289-294; K-B, p. 723; Gross, *Lives*, pp. 545-562; Albert Fossier, "Charles Aloysius Luzenberg, 1805-1848. A history of medicine in New Orleans during the years 1830 to 1848," *Louisiana Hist. Quart.*, 1943, 26: 49-137.

³³ Packard, "Foreign influences," pp. 1024-1025; DAB, 1934, 13: 582-583; K-B, pp. 856-857; *Bull. Hist. Med.*, 1948, 22: 249; Waring, *Medicine in South Carolina*, pp. 278-279.

³⁴ Osler, *An Alabama Student*; Emmett J. Carmichael, "John Young Bassett, the Alabama student," *J. Med. Assoc. Alabama*, 1964, 34: 30-35; K-B, pp. 71-72; Packard, "Foreign influences," pp. 1026-1027.

³⁵ Stone, *Biography*, pp. 136-139; DAB, 1930, 5: 478-479; K-B, pp. 338-339.

At least two, James Jackson, Jr.,³⁶ and Oliver Wendell Holmes,³⁷ graduated from medical school—Harvard—after returning home

Of the 222 we know where 139 earned their M. D. degrees. Fifty-four graduated from the University of Pennsylvania, nineteen from Harvard, fourteen from the Medical College of South Carolina, five from the College of Physicians and Surgeons of New York, four from Transylvania, and seventeen from other medical schools. Few Americans except those from New Orleans and Louisiana became candidates for the diploma of the Faculté de Médecine. The *Registre des Inscriptions* for 1836, for example, contains 8950 names, some more than once since a candidate usually enrolled in courses four times a year—in January, April, July, and November. Only forty-one of those who “inscribed themselves” were from the United States; nearly all of them gave either New Orleans or Louisiana as their homes. Indeed, of the twenty-one Americans who earned the French medical degree during the 1830s and later, nineteen were from either Louisiana or New Orleans.³⁸

Where these doctors came from in the United States is difficult to determine precisely, since biographical information on many of them is insufficient. Nonetheless, an analysis of available data shows that thirty-four were New Englanders with twenty of these from Boston; fifty-eight from the middle states with twenty-five from New York, both city and state; and twenty-three from Philadelphia; ninety-one from the South, including forty from New Orleans and Louisiana and twenty-five from South Carolina; and fifteen from the West with nine from Kentucky.

More significantly, our research discloses that at least sixty-seven of the doctors who studied in Paris taught in American medical schools either before or after they went abroad. Indeed, before the Civil War most prominent, established medical schools had some Paris-trained men

³⁶ Jones, “An American medical student;” K-B, p. 602; James Jackson, *A Memoir of James Jackson Jr. M.D. etc.* (Boston, 1835). Jackson received his M.D. in 1834.

³⁷ Miriam Rossiter Small, *Oliver Wendell Holmes* (New York, 1962); Eleanor M. Tilton, *Amiable Autocrat. A Biography of Oliver Wendell Holmes* (New York: H. Schuman, 1947). Holmes received his M.D. in 1836.

³⁸ *Tables chronologiques et alphabetiques des thèses in 8° soutenues à l'Ecole de médecine de Paris (1798-1878)*. 4 vols. To establish this figure we compared the names of “enrollées” that appeared in the *Registres* between 1820-1839 with those earning diplomas as set down in Vol. I (1798-1824), II (1825-1837), and III (1838-1857) and with those admitted to practice named in the *Registre du comité médical de la Nouvelle-Orléans, 1816-1854* (Mss in the Rudolph Matas Medical Library of Tulane University).

on their faculties. These men, like Moses Lewis Linton³⁹ and Charles Alexander Pope⁴⁰ in St. Louis, introduced their students to French medicine.

As to how many Americans pursued medical studies in Paris in any given year it is almost impossible to determine since few appear in the *Registres* as candidates for the diploma. Most took advantage of the French government's generosity and attended the lectures and clinics without paying the fees required for formal enrollment. Thus official French records, at least those examined by the present writer, do not furnish a comprehensive census of American medical students in the city.⁴¹ Americans did take private lessons and paid for this instruction, but we have found no documents that indicate how many did this.

Contemporaries commented on the presence of their countrymen, but their estimates are imprecise. Charles Thomas Jackson, for example, judged there were forty or fifty American physicians in Paris in December 1829⁴² while his kinsman, James Jackson, Jr., noted "about thirty" in April of 1832.⁴³ A reasonable guess would be an average of thirty to fifty a year, but since the students as opposed to the "medical tourists" tended to remain more than one year, a census for consecutive years would include some of the same men.

Americans, therefore, constituted but a tiny percentage of the Parisian

³⁹ Linton received his M.D. from Transylvania in 1835, studied in Paris and other European medical centers in the late 1830s and early 1840s. He was on the faculty of the St. Louis Medical School from 1842 to 1872. See Wilbur Morse Shankland, *Medical Education in St. Louis before the Civil War (1836-1861)* (Unpublished dissertation, Washington University, St. Louis, 1953), pp. 80-88. For Linton's accounts of his European medical experiences see "Hospitals and medical schools of London, Paris, Dublin and Edinburg," *Western J. Med. & Surg.* 1840, 1: 391-395; 2: 69-73, 160-163; 1841, 3: 65-74.

⁴⁰ Pope studied in Paris and in Vienna for two years following his graduation from the University of Pennsylvania Medical School in 1839. He was Professor of Anatomy at St. Louis Medical College. See Shankland, *Medical Education*, p. 82; K-B, p. 921; Gross, *Lives*, pp. 21-24; and William S. Middleton, "Charles Alexander Pope," *Ann. Med. Hist.* 1940, 3rd. ser., 2: 422-431.

⁴¹ For a discussion of the sources and methods used in identifying the American doctors in Paris see Jones, "American doctors."

⁴² Letter from Paris dated December 6, 1829, in Charles Thomas Jackson Papers (Manuscripts Division, Library of Congress), hereafter cited as CTJ. Upon receiving his M.D. from Harvard in 1829 Jackson went to Europe and lived in Paris on several occasions between 1829 and 1832.

⁴³ Letter from Paris dated April 1, 1832, in James Jackson Papers (Francis A. Countway Library of Medicine, Boston), hereafter cited as JP. Except for tours Jackson studied in Paris from May 1831 to July 1833. Other manuscripts letters are in the Putnam, Jackson, and Lowell Papers, Vol. I-II (Mass. Hist. Soc., Boston).

medical student population which one writer puts at 5,000 in 1830;⁴⁴ another at 2,000 around 1835.⁴⁵ Also they were few compared to the number of their countrymen who graduated from American medical schools in the 1830s. By 1837, for example, there were 2500 students enrolled in twenty-three degree-granting institutions.⁴⁶ The University of Pennsylvania alone granted 1,418 M. D.s in this decade.⁴⁷ Still about as many Americans studied medicine in Paris in the 1830s as went to Edinburgh between 1769 and 1819 (145), yet far fewer during the entire French period than in German universities between 1870 and 1914—667 to 15,000.

How does this collective portrait compare with that of the medical argonauts who went to Paris during the other decades of the "French period"? Our figures not only support the accepted view that Paris in the 1830s was a "medical mecca," but reveal that more doctors went during these years than had been previously known. Indeed, nearly twice as many visited the city in this decade as in the preceeding and succeeding ones—105 and 128 respectively. Even more—279—went in the 1850s than in the 1830s despite the growing attraction of Vienna. George H. Doane, for example, placed at "between three and four hundred" those of his countrymen in Paris in the winter of 1852.⁴⁸ By then American doctors were so numerous and, apparently, self-conscious of their national identity that they organized in 1851 the American Medical Society in Paris which flourished until 1857.⁴⁹

Throughout the "French period," as in the 1830s, the University of Pennsylvania produced most of the M. D.s who went to Paris, more than from the next three schools combined. The figures are: Pennsylvania, 164; Harvard, 60; Medical College of South Carolina, 51; and Jefferson Medical College in Philadelphia, 34. In the 1850s, interestingly enough, both South Carolina (33) and Jefferson (29) produced more Paris-bound M. D.s than Harvard (28).

⁴⁴ Richard H. Shryock, *The Development of Modern Medicine* (New York: Knopf, 1947), p. 151.

⁴⁵ Mireille Wiriot, *L'enseignement clinique dans les hôpitaux de Paris entre 1794 et 1848 (d'après des documents de l'époque)* (Paris, 1970), p. 149.

⁴⁶ Robley Dunglison, *The Medical Student* (Philadelphia, 1837), p. 306. The present writer estimates 3000 students in thirty or more schools by 1839.

⁴⁷ *Catalogue of the Medical Graduates of the University of Pennsylvania, etc.*, 2nd. ed. (Philadelphia, 1839).

⁴⁸ G. H. Doane, "Comparative advantages of Vienna and Paris as places for medical study," *New Jersey Med. Repr.*, 1854, 7: 18.

⁴⁹ See *Constitution of the American Medical Society in Paris* (Paris, 1857).

The geographical distribution, too, remained about the same during the entire period as for the 1830s except that the percentage of doctors from the West increased in the 1850s. In the decade considered in this essay about 15% came from New England, 26% from the middle states, 41% from the South, and 5% from the West. By the 1850s the percentages for the same regions were: 14%, 30%, 34%, 17%, with twenty men from Ohio as compared to four in the 1830s.

The research upon which the preceding statistical profile is based goes much further than any previous attempts⁵⁰ to identify these important links between the Parisian medical world and the United States. While some of the results such as the large number of M. D.s from the University of Pennsylvania, the preponderance of students from New Orleans and Louisiana who actually earned the French diploma, the growing number of students from the West and the South in the 1850s may not be surprising, we have, for the first time quantitative support for such surmises.

II.

Why did these doctors go to Paris to study medicine in the 1830s? Individual motives are difficult to determine partly because we do not have accounts of their Parisian medical experiences from all who went. Even the diaries and letters used in this study do not disclose directly the motives of their authors. Most agreed the city provided opportunities for acquiring practical knowledge which were unavailable at home so, presumably, most found what they sought. When one considers, however, American medical education around 1830 compared to that in Paris, the increasing and favorable attention French medicine received in the American medical press, and the doctors' own enthusiastic comments to their friends at home on the advantages the city afforded, a general answer to the question emerges even though it may not fit each of the two hundred and twenty-two.

The state of medical education in the United States around 1830⁵¹

⁵⁰ See Jones, "American doctors," p. 146, note #14, for a summary of previous research on this point.

⁵¹ This sketch is based upon the following: Abrahams, *Extinct Medical Schools*; Wyndham Bolling Blanton, *Medicine in Virginia in the Nineteenth Century* (Richmond: Garrett & Massie, 1933); George M. Gould, ed., *The Jefferson Medical College of Philadelphia* (New York-Chicago, 1904); Harrington, *Harvard Medical School*; Otto Juettner, *Daniel Drake and His Followers* (Cincinnati, 1909); Rudolph Matas, *History of Medicine in Louisiana* (Baton Rouge, 1938-1952); Norwood, *Medical Education*; Packard, *History of Medicine*; Shankland, *Medical Education in St. Louis*; Truax, *The Doctors Warren*; Walsh, *History of Medicine in New York*; Waring,

suggests why some doctors sought further professional training abroad. There was no dearth of medical schools and thousands of degrees were conferred every year. The *Boston Medical and Surgical Journal*, in 1832, named twenty-one "established schools of medicine" distributed among fourteen states. By the mid-1840s there were thirty-five. But since most states, in the 1830s, repealed laws regulating practice one could practice medicine without a medical degree. And since there were no national standards of accreditation countless "proprietary schools" were opened in which the professors, for fees and little else, awarded diplomas. Respectable institutions hesitated to toughen their admissions requirements and to lengthen their prescribed course of study for fear of losing students to the diploma mills.

Even established schools offered only two years of formal instruction. Anatomy, physiology, and chemistry were considered the basic pre-clinical subjects; surgery, medicine, therapeutics, materia medica, obstetrics, and diseases of women the principal clinical ones. Faculties customarily numbered from five to seven professors. Few were either specialists or had done research in the field in which they lectured. Courses lasted four months and were taught by lecture, even those we would consider required laboratory work. Frequently one professor lectured on more than one field. Theses were required, but they rarely consisted of more than digests of textbooks. Graduates were expected to acquire practical experience by serving six months to two years as apprentices.

Lewis A. Wolfley's medical education is illustrative, if not typical. After a brief apprenticeship he obtained, at the age of eighteen, a license to practice in Ohio. Then he attended Ohio Medical College for one year and received a diploma for having successfully completed courses in chemistry and pharmacy, materia medica, surgery, obstetrics, physiology, anatomy, and the theory and practice of medicine. He became a surgeon in the United States Navy and studied in Paris from December 1835 to April 1836.⁵²

History of Medicine in South Carolina; Joseph Carson, *A History of the Medical Department of the University of Pennsylvania* (Philadelphia, 1869); George W. Corner, *Two Centuries of Medicine* (Philadelphia: Lippincott, 1965); Henry Burnell Shafer, *The American medical profession, 1783 to 1850* (New York: Columbia Univ. Press, 1936); Joseph F. Kett, *The Formation of the American Medical Profession* (New Haven: Yale Univ. Press, 1968). Shryock, *Medicine in America*; Henry R. Viets, *A Brief History of Medicine in Massachusetts* (Boston-New York: Houghton, Mifflin, 1930); Roland Lanser, "The pioneer physician in Missouri," *Missouri Hist. Rev.*, 1949, 44: 31-34.

⁵² Wolfley, pp. 526-527.

Lack of clinical instruction was, however, the most serious weakness. This was due, in part, to the absence of large hospitals which, like those in Paris, contained hundreds of patients and thus furnished material for clinical teaching as well as research. Cities and some medical schools like Jefferson Medical College maintained dispensaries for the indigent, but these had few beds and were little used for training doctors. Massachusetts General Hospital admitted its first patient in 1821, but languished as a teaching hospital in the 1830s despite the hopes of James Jackson and J. C. Warren. Between 1834 and 1845 medical students at the University of Pennsylvania were admitted to the wards of the new "Blockley" hospital whose staff included W. E. Horner, S. G. Morton, J. Randolph, and Richard Harlan, all of whom had studied in Paris. Perhaps their first-hand contact with clinical teaching in Paris inspired this similar effort in Philadelphia. Certainly the presence of the 540-bed Charity Hospital plus Paris-educated doctors facilitated the organization, in 1834, of the first medical schools in New Orleans.

Despite these isolated advances most medical schools, even by the end of the 1840s, offered neither clinical instruction nor required students to attend hospitals or dispensaries. Only about half made dissection of the human body compulsory. Around 1830, therefore, American medical culture lacked what E. H. Ackerknecht so aptly termed "the workshops of the new medicine"⁶⁸ (hospitals) as well as the teaching and research that made use of them. No wonder French medical achievements and the facilities, theories, men, and educational system that produced them received increasing attention in the American medical press.

Three journals published in Philadelphia reflected growing American interest in and admiration for what was going on in Paris and thus, certainly, must have spurred some of their readers to seek professional improvement abroad. Between 1821 and 1824 the *Journal of Foreign Medical Science and Literature* published lengthy reviews, extracted from British journals, of Laennec's *De l'auscultation médiate*, Béclard's *Addition à l'anatomie générale de Xavier Bichat*, and Parent-Duchatelet's *Recherches sur l'inflammation* as well as noting all major treatises pouring from the prolific Parisian medical presses. It acquainted American readers with Broussais's doctrines of physiological medicine and the researches of Magendie and of Pinel. French work in pathology and

⁶⁸ Erwin H. Ackerknecht, *Medicine at the Paris Hospital, 1794-1848* (Baltimore: Johns Hopkins Press, 1967), p. 15.

physiology received even more attention after 1824 when John D. Godman, himself a lecturer on and experimenter in these subjects, became editor. In April 1824, for example, the "Foreign Intelligence" section of the *Journal* noted twenty-one foreign medical works; sixteen were French. Godman, moreover, added a new department devoted to detailed descriptions of interesting cases and experiments. Here too extracts from French journals predominated. The pages of *The North American Medical and Surgical Journal* for 1821 through 1831 and of the *American Journal of Medical Sciences* for 1828 through 1831 likewise devoted more and more space to medical news from Paris.⁵⁴

These journals also published American doctors' impressions of the Parisian medical world, a genre of travel literature that appeared more frequently in American medical journals from the 1830s onwards as the French capital attracted more visitors. The articles of Elisha Bartlett and of René La Roche illustrate this trend. Both men went to Paris in the 1820s, then, upon returning home, presented American readers with favorable accounts of what they had seen and heard.

Upon obtaining his M. D. from Brown in 1826, Bartlett sailed for Europe. He remained in Paris from June to December and after the customary winter-time tour of Italy settled again in the city from March to December 1827. With American doctors from Pennsylvania, Boston, and Virginia he lived in a rooming house on the Rue St. André des Arts. In the morning, before breakfast, he attended the medical and surgical *cliniques* in the hospitals, listening to the resident physicians and surgeons comment on cases at the bedside and in the amphitheater, then witnessing operations. In October he enrolled in a private course in pathological anatomy in which students observed diseases and preformed operations. By November the American was totally absorbed in a demanding routine of visits to the hospitals, lectures, and private courses. Paris, he was gratified to discover, provided opportunities for the serious study of medicine as rich as he had anticipated.⁵⁵

Bartlett never forgot these exciting experiences. Back home while teaching at various medical schools he enthusiastically alerted his countrymen to the advantages of studying in Paris. La Pitié alone, he noted in an article on the Parisian hospitals,⁵⁶ had six hundred beds

⁵⁴ These remarks are based on a reading of these journals for the years cited.

⁵⁵ This account is based upon Bartlett's letters from Paris between August 3, 1826 and May 3, 1827. The manuscripts are at the Yale University Medical Library.

⁵⁶ Elisha Bartlett, "Account of the *Hôpital de la Pitié*, *Hôpital de St. Antoine*, *Hôpital Necker*, *Hôpital Cochin*, and *Hôpital Beaujon* at Paris," *Am. J. Med. Sci.*, 1829, 4: 117-122.

and nearly five thousand cases a year. He also called attention to the private courses whereby a student could learn much in a short time. Especially profitable, in Bartlett's opinion, was Jacques Lisfranc's newly established (since 1825) three-month "free" clinic in operative surgery at La Pitié in which the surgeon first described a case, then operated, then directed the students' operations.

In 1831 Bartlett published biographical sketches of such Parisian medical notables as François Broussais and the surgeons Guillaume Dupuytren, Antoine Dubois, Jean Nicholas Marjolin, Jean Civiale, and Anthelme Richerand.⁵⁷ Their work, claimed Bartlett, deserved to be better known in the United States and their industry and professional skill were models that American students should emulate. Before returning to France in the 1840s, Bartlett, as has been mentioned, systematically formulated and unreservedly endorsed the philosophy of the "Paris school" of clinicians.⁵⁸ The future of medicine, he asserted, lay with the French "Modern School of Medical Observation" whose achievements in identifying and describing diseases were the result of meticulous observation of numerous cases in the wards using auscultation followed by post-mortem dissections to establish correlations between symptoms and internal lesions. By using such rigorous empirical methods and shunning general, *a priori* theories of disease, Americans too could become "...fact-finders, instead of pompous phraseologists. . . ." ⁵⁹ Thus Bartlett, in his writings and teaching, described and praised certain features of the Parisian medical world: numerous hospitals and cases, private lessons affording practical experience, opportunities for dissecting, clinical instruction based on observation and dissection, and teachers whose knowledge came from labors in the hospitals. Doctors following Bartlett to Paris in the 1830s echoed his opinions.

René La Roche, like Bartlett, also offered American readers a first-hand appraisal of French medicine. LaRoche's father received his medical education at Montpellier. The son was born in Philadelphia, obtained an M. D. from the University of Pennsylvania in 1820, and three years later translated Cabanis's treatise on the certainty of medicine. In 1828-1829 La Roche, now one of the editors of the *North American*, visited European medical centers. The result was a series of judicious, informed

⁵⁷ Jean Louis Hippolyte Peisse, *Sketches of the Character and Writings of Eminent Living Surgeons and Physicians of Paris*. Translated by Elisha Bartlett (Boston, 1831).

⁵⁸ Elisha Bartlett, *An Essay on the Philosophy of Medical Science* (Philadelphia, 1844).

⁵⁹ Ackerknecht, "Elisha Bartlett," p. 48.

accounts that appeared in the two leading Philadelphia medical journals.

In "French Medicine"⁶⁰ he summarized the principles and modes of treatment of four schools of French practitioners, i. e. the disciples of Philippe Pinel, Broussais and his followers, the "eclectics" or "anatomy-pathologists," and the "symptomatists." Each, he asserted, offered something of value. Yet, at the same time, younger members of each sect ignored experience and utilized certain remedies to ridiculous excess. Pinel and Bichat, La Roche regarded as two of the founders of the Paris school. Their most valuable achievement was simplifying on rational principles the description and classification of diseases, formulating rules of diagnosis and prognosis, improving methods of precise observation, and arguing that diseases had specific, local origins in inflamed tissues rather than in an imbalance of humors. La Roche considered the Pinelian expectant therapeutics too timid, relying too much on nature to effect a cure and employing too late in the course of a disease even moderate remedies such as bleeding, dieting, and purging.

Broussais whose influence was in the ascendancy from the 1820s to around 1834 had produced, maintained La Roche, a "revolution in the science and practice of medicine." After summarizing the principles of "physiological medicine," La Roche acknowledged what some contemporaries questioned, that the master and his disciples observed with great care the condition of all internal organs and thus established the effect of one irritated part on another. On balance, judged the American, the Broussaists' practice was preferable to that of other Parisian physicians as well as most English and American. At least they boldly attacked the disease. But La Roche, like some of his countrymen in the 1830s, also pointed out serious weaknesses in the physiological school's therapeutics. Convinced that all disease was due to inflammation, the Broussaists bled everyone even though experience demonstrated such drastic measures weakened patients. Pompous and self-assured, they refused to admit, even in the face of evidence to the contrary, that purgatives, emetics, tonics, and dieting had any therapeutic value at all. Such uncritical acceptance of their master's precepts La Roche deplored and judged it the physiological school's greatest shortcoming.

Equally as balanced was La Roche's appraisal of the "eclectics." As a result of careful observation of numerous cases in the wards followed by post-mortem dissections these men—Gabriel Andral, Auguste François Chomel, and Louis—had produced detailed descriptions of different

⁶⁰ *N. Amer. Med. & Surg. J.*, 1829, 8: 293-818.

diseases rather than assuming, as the Broussaists did, that all diseases resulted from inflammation. But the eclectics were more concerned with describing accurately the course of a disease than with determining its cause and treatment. Thus their therapeutics, argued La Roche, had two serious flaws; excessive and sometimes fatal delay in applying remedies and, secondly, employing remedies in analogous cases without inquiring why they worked. Unlike the Pinelians, however, they were at least willing to try something. While he admired the eclectics' clinical methods and contributions to knowledge of diseases, La Roche concluded "... we cannot, with justice, allow them credit for any improvement in the treatment of disease." Admitting that he had characterized each school by extreme examples, La Roche, nevertheless, found French practice unworthy of the "unbounded praise lavished upon it by the French themselves" and too timid, compared to English and American, in treating acute diseases.

French medical education, however, had features Americans could emulate with profit. Students were obliged to take courses in all fields of medicine, while Americans' scanty knowledge of physiology, pathology, and chemistry made them "... little more than clever routine practitioners."

Like Bartlett and others, La Roche applauded the "zeal and industry" of French medical men citing as an example Lisfranc who walked to La Pitié before seven in the morning, visited his patients, and lectured by candlelight, then attended his private practice and concluded the day in reading and writing. "The English as well as ourselves," he commented, "take it more leisurely." If French doctors had a flaw it was their cultural provincialism; they knew nothing of medical advances being made elsewhere.

Despite this criticism, which other Americans were to echo, La Roche's 1829 account of medical Paris was, to the present writer's knowledge, the fairest and best informed one to appear at the time. It acknowledged that during the previous twenty to thirty years the French had made the largest contribution to medical science and that French anatomists, physiologists, pathologists, and surgeons were the best in the world. It clearly and judiciously appraised French therapeutics and firmly claimed that French practice was as good as English or American.

French medical education, on the other hand, was superior to both and offered a model of what was needed in the United States.⁶¹ Students had

⁶¹ René La Roche, "Account of the origin, progress, and present stage of the medical school of Paris," *Am. J. Med. Sci.*, 1831, 8: 109-124, 401-418; 1832, 9: 351-388.

to complete bachelor degrees in both letters and sciences to be admitted as candidates for the medical degree. The course lasted four years and students were required to take sixteen subjects including anatomy, physiology, pathology, medical chemistry, obstetrics, and pharmacology, plus clinics in both medicine and surgery. Besides writing a thesis they were also obliged to pass five examinations. At the last one they had to present six observations made at the bedside. This rigorous and rigid curriculum—students had no freedom to choose the lectures they were to attend—La Roche commended. It emphasized breadth of learning and clinical experience and it excluded from the medical profession quacks and cheap diplomas such as existed in the United States.

Equally admirable in La Roche's opinion was the French method of recruiting professors through public competition—the *concours*—and of having the state rather than the students pay their salaries.

Concluding his article, La Roche noted that the French "... plan of instruction ... is so far superior to that in force in our schools ..." that Americans should study in France rather than at home or in the British Isles. Only Germany offered comparable professional training.

Thus Godman, Bartlett, and La Roche in the late 1820s and early 1830s placed before American readers informed and generally favorable accounts of French medicine and of the opportunities Paris afforded for acquiring practical experience. How influential their descriptions and judgements were in causing the "hegira" in the 1830s we cannot say with certainty, but few of their audience could fail to appreciate the advantages of further study in the French capital. Perhaps Shryock's conclusion that receptivity to French medicine in Philadelphia around 1830 and the migration of doctors to Paris thereafter was both a cause and a consequence of dissatisfaction with the teaching and facilities there (Philadelphia) applies as well to other Americans medical centers.

Certainly those who did go were generally unanimous in their praise of what the city offered. Perhaps more than accounts in medical journals, their own personal appraisals drew their countrymen to France. What they found in Paris suggests what was lacking at home. "While still a medical student," reminisced Alfred Stillé, "two of my fellow townsmen (Philadelphians) returned from abroad glowing with the fire they had caught in Paris, the then acknowledged center of medical science. Gerhard and Pennock⁶² were the apostles of the school of observation

⁶² Casper Wistar Pennock (1799-1867) received his M.D. from Pennsylvania in 1828 then studied in Paris between 1830 and 1833. Cf. Packard, "Foreign influences," pp.

under whose preaching I became a zealous convert. As soon as it was possible I hastened to the enchanted scene of their European labors."⁶³

In the opinion of the American doctors who went there in the 1830s, what were the advantages of studying medicine in Paris?

First and foremost the city had hospitals where numerous cases of various diseases as well as surgical operations could be observed in the clinics conducted by members of the hospitals' staffs.⁶⁴ Ferdinand Campbell Stewart who went to Paris after receiving his M. D. from Pennsylvania in 1837 published a comprehensive guidebook to medical Paris in which he listed thirteen general hospitals, eleven special hospitals, and twelve hospices.⁶⁵ Of the general hospitals, the Hôtel Dieu on the Isle de la Cité, La Pitié near the Jardin des Plantes, and La Charité on the Rue St. Pères were those most frequented by Americans. Of the hospitals treating particular diseases American medical students were attracted to the Necker on the Rue de Sèvres where Jean Civiale, on Saturday mornings, publicly performed his famous lithotripsy; St. Louis in the Faubourg du Temple, since 1802 devoted to dermatology; the Hôpital des Veneriens (renamed the Midi and reserved for male patients in 1836) in the Faubourg St. Jacques where since 1834 the American-born Philippe Ricord gave the only important clinic in Paris on venereal diseases; Salpêtrière, near the present Gare d'Austerlitz where Philippe Pinel's students and successors such as Dominique Esquirol treated mental disorders; and Enfants Malades on the Rue de Sèvres, the first children's (under 15) hospital in the world where until 1839 L. B. Guersant lectured on pediatrics.⁶⁶

Situated, with few exceptions, in the crowded, stinking, eastern faubourgs, these hospitals mirrored the diseased state of the popular classes⁶⁷ and furnished clinical material for students. Fifty-three thousand patients were admitted in 1827.⁶⁸ Reporting on mortality rates in 1828, the *Conseil de salubrité* cited 24, 299 deaths compared to 23, 241

1021-1022; William Wood Gerhard, "Sketch of the life and professional labors of Dr. C. W. Pennock," *Trans. Coll. Physicians Philadelphia*, 1868, n. s. 4: 245.

⁶³ Osler, *An Alabama Student*, p. 235.

⁶⁴ For a recent excellent account of the Parisian clinics, clinicians, and their teachings see Wiriot, *L'enseignement cliniques*, especially pp. 135-205. Official clinics were conducted by members of the Faculté.

⁶⁵ F. C. Stewart, *Hospitals and Surgeons of Paris* (New York, 1843).

⁶⁶ This paragraph is based on Wiriot, *op. cit.* and on Ackerknecht, *Medicine*, Ch. II.

⁶⁷ Louis Chevalier, *Classes laborieuses et classes dangereuses à Paris pendant la première moitié du XIX^e siècle* (Paris: Plon, 1958).

⁶⁸ Ackerknecht, *Medicine*, p. 18.

the previous year. Four-fifths were due to *phtisie, catarrh pulmonaire, l'entérite, la gastrite, and l'inflammation des poumons*.⁶⁹ At the Paris hospitals, noted James Jackson in 1831, one learned most about diseases of the chest.⁷⁰ In six months the young medical student examined between one and two hundred cases of *phtisie* in Louis's ward at La Pitié⁷¹ and observed there, for the first time, emphysema which he had only read about in Laennec at home.⁷²

"The interesting cases are without end. . .," wrote the enthusiastic Jackson. Expressing to his father a desire to spend five to ten years observing diseases in the Parisian hospitals, James abandoned his original plan to go to Germany. There, Louis had advised him, he would see only men, not diseases.⁷³ In Paris, he wrote, the opportunity to study morbid anatomy is superior to that in Boston ". . . for in our country it is impossible to follow the subject with such freedom owing to prejudices existing among us, and at our Hospital our cases are necessarily imperfect as we do not retain our chronic cases as they do here till death."⁷⁴ Oliver Wendell Holmes, after frequenting St. Louis, reported that he had acquired ". . . in less than two months a knowledge of diseases of the skin that astonished myself, a knowledge which I could never have obtained in America and which you may conceive when I say that I have seen in a single morning nearly 80 cases and that under the eyes of the first authority in the world. . . ."⁷⁵ All the morning I am in the hospital," he continued, "where hundreds of cases which are only met with singly in a little city like Boston, are collected. . . ."⁷⁶ Then Holmes, the best writer of all the American medical students, summarized the advantages of observing diseases in the Paris hospitals.

If I was asked—why do you prefer that intelligent young man who has been studying faithfully in Paris to this venerable practitioner who has lived more than twice as long—I should say, because the young man has experience. He has seen more cases perhaps of any given disease—he has seen them grouped so as to throw more light upon each other—he has been taught to bestow upon them far

⁶⁹ *Gaz. méd. de Paris*, t. I, no. 4 (January 23, 1830); *Am. J. Med. Sci.* 1829, 4: 528-529.

⁷⁰ JP, October 18, 1831.

⁷¹ *Ibid.*, March 24, 1832.

⁷² *Ibid.*, February 16, 1832.

⁷³ *Ibid.*, December 26, 1832.

⁷⁴ *Ibid.*, March 24, 1832.

⁷⁵ Letter from Paris dated June 6, 1835, in Oliver Wendell Holmes Papers (Houghton Library, Harvard University). Hereafter cited as HP.

⁷⁶ *Ibid.*

more painful investigation—he has been instructed daily by men whom the world allows to be its most competent teachers—by men who know no master and teach no doctrine but nature and her laws, pointed out at the bedside for those to own who see them, and for the meanest student to doubt, to dispute if they cannot be seen—he has examined the dead body oftener and more thoroughly in the course of a year than the vast majority of our practitioners have in any ten years of their lives. True experience is the product of opportunity multiplied by years. . . .⁷⁷

For Jonathan Mason Warren, who was primarily interested in surgery, the hospitals provided a rich and varied fare. A friend of Holmes and Jackson, Mason spent nearly three years in Paris—from September 1832 to April 1835. His fortnightly letters to his father describe in great detail operations French surgeons attempted, their discussions of cases, their techniques, instruments, and results. At La Charité he saw Philibert Roux remove cancer from the face, cut out a cancerous elbow joint, remove cataracts and tumors, amputate the neck of the uterus, perform lithotripsy and staphylorrhaphy, and operate for *fistula in ano* and hernia. At Les Invalides, the veteran's hospital, he watched the famous Baron Dominique Larrey cauterize an ulcer with the *fer rouge*. He saw Civiale perform his specialty, Jean Diefenbach, from Berlin, rhinoplasty, and Ricord perform castration for tuberculous testicles. At the Hôtel Dieu he saw Dupuytren's celebrated operation for artificial anus and watched the master remove tumors. And at La Pitié he witnessed Lisfranc's famous operation for removing the neck of the uterus.⁷⁸

Thus the Paris hospitals through their clinics offered Americans the opportunity of following resident physicians and surgeons through the wards, listening to their *visites commentées au lit du malade*, observing cases, attending *leçons* in the amphitheater after the visit, watching operations and autopsies. Access, moreover, to both the "official" clinics, of which there were nine in the 1830s as well as to the more numerous *cliniques libres* conducted by men of the staffs of the hospitals (*chefs de service hospitaliers*) were free.

Still, there were some annoying inconveniences. Official clinics conducted by *professeurs titulaires* of the Faculté were held at the same time, early in the morning, so that students could attend but one a day. Furthermore, those at Hôtel Dieu and La Charité situated close to the medical school were crowded making it difficult to examine the patients much less hear the comment. Since most Americans were not candidates

⁷⁷ *Ibid.*, August 13, 1833.

⁷⁸ Jonathan Mason Warren letters from Paris (September 29, 1832-April 5, 1835) in J. C. Warren Papers (Mass. Hist. Soc.). Hereafter cited as JMW.

for the degree they, unlike French students, did not have to attend the official clinics. Their interests and more flexible schedules allowed them to follow clinics at more remote hospitals. James Jackson, for example, quit following Auguste François Chomel at the Hôtel Dieu because his visit was by candlelight at seven o'clock in the morning and attracted over one hundred students. On one occasion James was about to place his ear on a patient's chest when a French student thrust his head in between.⁷⁹ Louis's *clinique* at La Pitié, by contrast, was given during the daylight hours, was more leisurely, and was followed at this time (1831) by few students so that all had a chance to practice with the stethoscope.⁸⁰

From time to time, too, students were not admitted to the wards. Alfred Velpeau, in October 1831, explained to Jackson that the maternity wards were closed ". . . because of the constant difficulties which arose from the assemblage of these same gentlemen and the young *sages femmes* who attend . . . the complaint is that *ils font plus d'enfants que d'accouchements*."⁸¹ Students, therefore, learned obstetrics by taking private lessons from midwives. Not until 1834 was an official clinic in this specialty established at the new Hôpital des Cliniques. Incidents such as Mason Warren described resulted in students being prohibited from visiting the *salles* at the Hôpital des Veneriens:

I had intended on quitting La Charité to have resumed following the Venereal Hospital which had become uncommonly interesting, but a circumstance which happened there the other day of an intern smuggling one of the patients out of the hospital before she was properly cured caused the faculty to close the hospital very unjustly and prevent the students following there for the present.⁸²

Besides the hospitals, lectures at the medical school, the Collège de France, the Sorbonne, and the Jardin des Plantes were open to students without charge. Courses in fourteen subjects—anatomy, physiology, medical chemistry, *physique médicale*, *histoire naturelle médicale*, pharmacology, hygiene, surgical pathology, operations and instruments, therapeutics and materia medica, legal medicine, obstetrics and pediatrics, pathology and general therapeutics (a chair created in 1831 for Broussais), and pathological anatomy (a bequest from Dupuytren founded this chair in

⁷⁹ JP, July 27, 1831.

⁸⁰ *Ibid.*, August 11, 1831.

⁸¹ *Ibid.*, October 7, 1831.

⁸² JMW, February 14, 1833.

1835) began in November at the Ecole de Médecine.⁸³ Magendie's experiments attracted students to the Collège de France, while Baron Georges Cuvier and Geoffrey St. Hilaire at the Jardin des Plantes and Gay-Lussac and Thénard at the Sorbonne were as well known to Americans with scientific interests as the medical notables at the Faculté and in the hospitals.

To attend these lectures and visit the hospitals as well as the famed medical museum and libraries cost the student nothing. One had only to present his passport and diploma to be admitted. Americans, to a man, praised the government's generosity and cited it as another reason for studying in Paris. Those who had visited London invariably echoed Charles Thomas Jackson's tart observation:

I do not like the character of John Bull, he looks so surly after living with the polite and urbane French...all their (British) institutions require the Golden Key, whereas in France everything is Free in their public institutions and all strangers are admitted with greater freedom than the natives themselves...⁸⁴

Most Americans, however, quickly realized that valuable as the free instruction was, the most efficient way to acquire a great deal of useful knowledge in a short time was to take private lessons in particular subjects. James Lawrence Cabell wrote:

I find too that all the advantages of the medical school are not obtained without a fee for though the lectures are given publicly and the hospitals are open in the morning during the visits of the attending physicians, they are not attended by the students during the other parts of the day, except under these circumstances: the Internes or medical assistants who reside in the Hospital and prescribe for the sick in the absence of the Professors generally make an evening visit through their wards giving clinical instruction to a small class, the number being generally limited to 4 or 5, in the payment of 30 francs a month from each... Most American students are in the habit of taking thus a course at one hospital on diseases of the Heart, another on those of the lungs, another of the eyes, & another of the skin, while some add to these a course on surgery and midwifery.⁸⁵

Mason Warren described his course on the last named subject:

I have just commenced a course of *touches & accouchement* at Mme. La Chapelle spending 1 or two hours there every day after dinner. She gives us a short lecture

⁸³ See A. Prévost, *La faculté de médecine de Paris, ses chaires, ses annexes et son personnel enseignant de 1794 à 1900* (Paris 1900).

⁸⁴ CTJ, May 13, 1831; cf. JP, London, September 12, 1832: "Reflect that at Paris I am to study under the influence of men whose aim is science—at London, *gain*."

⁸⁵ Letter from Paris dated January 28, 1837 in James Lawrence Cabell Papers (Manuscripts Division, University of Virginia Library). Hereafter cited as JLC.

on accouchement. We then manouver on the machine & one or two women present themselves daily for examination in different states of pregnancy. Accouchments happen from time to time at which almost any of your friends can be present by paying a couple of francs.⁸⁶

"Touches" or "touching" i. e. "... examination by touch the state of the mouth of the womb etc. during the periods of pregnancy," C. T. Jackson judged as alone worth his trip across the Atlantic.⁸⁷ James Jackson's reaction was more restrained:

...all this is important knowledge, it enables one to enter upon the examination of uterus disease with more confidence than he otherwise could and altho' I am glad to avail myself of the opportunities here offered for acquiring it, I cannot but rejoice that the state of society is such in our own country that the same knowledge cannot be acquired there.⁸⁸

By means of private lessons Americans also improved their skill with the stethoscope, practiced surgical operations on cadavers, learned techniques of bandaging, examined morbid specimens, and observed cases of mental disorders. Internes, in most instances, conducted these classes in the wards after regular hours. Occasionally, however, a French authority on the subject gave the course himself. Gerhard, Pennock, and Jackson, for example, paid Louis to tutor them,⁸⁹ and Mason Warren performed experiments in ligating and torsing arteries under Jean Amussat's direction at the latter's private dissecting room.⁹⁰ Even though they had to pay for these lessons, Americans willingly did so and agreed that the availability of such instruction was another reason for going to Paris.

Also available and much appreciated were facilities and material for human dissecting. State laws and public intolerance made it difficult in the United States. Massachusetts passed the Anatomy Act in 1830 legalizing dissection and the obtaining of cadavers for that purpose.⁹¹ Even in the 1840s only about half of the medical schools required their students to take courses in dissecting.⁹² Privately run facilities, usually under the direction of men who had studied in Paris, offered some practical experience. In Paris, by contrast, as a result of a high

⁸⁶ JMW, January 27, 1833.

⁸⁷ CTJ, June 29, 1830.

⁸⁸ JP, October 7, 1831.

⁸⁹ Osler, *An Alabama Student*, p. 206; JP, February 3, 1832.

⁹⁰ JMW, May 6, 7, 1833.

⁹¹ Truax, *Doctors Warren*, p. 153.

⁹² Corner, *Two Centuries*, p. 94 ff.

mortality rate among the popular classes, cadavers were cheap and plentiful. Bassett paid six francs for one adult and forty sous for a child.⁹³ Smoking a cigar, wearing a blood-drenched blouse, holding an anatomy text in one hand and a scalpel in the other, the student worked at the *Ecole Pratique d'Anatomie* near the medical school or at the splendid new *salles* at Clamart near La Pitié where wagons daily transported their grisly cargoes from the hospitals and the morgue and caged dogs devoured the remains.⁹⁴ Holmes expressed his countrymen's appreciation of this opportunity:

This establishment (Clamart) is not one of the little informal suffocating holes in which the unhappy native of our uncivilized land is often obliged to pursue his labors, but a spacious court yard with several neat white *salles* and a garden and a fountain in the middle. In these precincts hundreds of students dissect during part of the year and operate during another. After having taken our lessons in operative surgery, a Swiss friend of mine . . . and myself . . . bought a few cheap instruments together and began to make ourselves operators. . . . At twelve o'clock every day, the hour of distribution of subjects you might have seen M. Bizot and myself . . . choosing our days provisions. . . . We paid fifty sous a piece for our subject and before evening we had cut him into inch pieces. Now all this can hardly be done anywhere in the world but at Paris—in England and America we can dissect, but rarely operate upon the subject, while here, one who knows how to use his hands and who gives his attention exclusively to the subject for a time may . . . become an expert operator in a few weeks.⁹⁵

For the American medical student who wanted to supplement his studies with reading, the flourishing Parisian medical press offered a rich fare. Thirty-two medical and scientific journals like Jules Guérin's *Gazette médicale de Paris* described interesting cases, experimental treatments and techniques, reviewed books, reported the proceedings of the Academies of Medicine and of Science, discussed the *concours*, and kept alive the flames of controversy.⁹⁶ Detailed treatises based upon their authors' research in the hospitals flowed to the booksellers. Of the three hundred and sixty "standard" French works Stewart listed in his guidebook, the great majority were published in the 1830s.⁹⁷ After observing skin diseases at St. Louis during the day, James Jackson started reading A.

⁹³ Letter from Paris dated March 7, 1836 in John Young Bassett Papers (State of Alabama Department of Archives and History, Montgomery, Alabama). Hereafter cited as Bassett.

⁹⁴ Augustus Kinsley Gardner, *Old Wine in New Bottles or Spare Hours of a Student in Paris* (New York, 1848), p. 68. Gardner's account is from 1845-1846.

⁹⁵ HP, May 14, 1835.

⁹⁶ *Gaz. méd. de Paris*, 1830-1833, *passim*.

⁹⁷ Stewart, *Hospitals*, pp. 179-209.

Cazenave "...with much pleasure and very different eyes from those I used in America for I have now seen the subjects of which he treats and descriptions without this are not much avail."⁹⁸ Contrary to his father's advice that he purchase only the books he would use immediately, James replied that he must have "the useful and important books of the French."⁹⁹ He began translating sections of Gabriel Andral's *Clinique médicale* that dealt with diseases of the lungs and chest.¹⁰⁰ Cruveilhier's illustrated treatise on morbid anatomy he called "... the most useful work I have yet seen of its kind . . . the very soul and body of all French Pathology. . . . I can't leave Europe without this work."¹⁰¹ In nearly every letter to his father Mason Warren reported on the Parisian medical press. He commented on new books comparing, where possible, the text with what he had personally observed. Some works such as Andral's medical dictionary he purchased for his own use; others such as brochures by Esquirol on monomania and by Jean Cayol on cancer he bought for his father. He summarized interesting cases that appeared in the journals and kept abreast of the controversies. And, like most American medical students, Mason concluded his long days with several hours of reading.¹⁰²

In Paris, too, could be obtained instruments of the most advanced design and finest craftsmanship, waxen anatomical models, and morbid specimens. Like his countrymen, Mason Warren bought these as well as books. Scarcely a packet sailed from Le Havre to Boston without a box aboard for his father. "I have bought to send you Dupuytren's Enteretome, some instruments for ligatures of the polypus uteri & a Polypus Forceps. Also some scissors for opening the intestines."¹⁰³ And again: "I send you by a ship sailing direct to Boston . . . two boxes—a large one containing 50 or 60 specimens of morbid bones, some skulls . . . and also the bones of the head separate. The skeleton I have had made expressly & wish you would be kind enough to look at it & see if any improvements could be made as I intend having one made for myself."¹⁰⁴ Holmes, too, bought a skeleton as well as botanical plates and a microscope.¹⁰⁵

These tools of the trade cost money. So too did the private lessons,

⁹⁸ JP, September 18, 1831.

⁹⁹ *Ibid.*, November 6, 1831.

¹⁰⁰ *Ibid.*, November 28, 1831. Cf. his Mss translation of Andral's *Clinique* (Countway Library).

¹⁰¹ JP, December 1, 1831.

¹⁰² JMW, *passim*.

¹⁰³ JMW, January 9, 1833.

¹⁰⁴ *Ibid.*, January 27, 1833.

¹⁰⁵ HP, *passim*.

the cadavers, and the examinations for the diploma. Even though the lectures and *cliniques* were free, all expenses for a year of study in Paris, according to those who went there,¹⁰⁶ came to about six hundred dollars a year, no more than one would pay for inferior instruction at home.

(To be continued)

¹⁰⁶ JP, February 27, 1832; Stewart, *Hospitals*; Vincent Y. Bowditch, ed. *Life and Correspondence of Henry Ingersoll Bowditch* (Boston, 1902), 2 vols., I, pp. 56-62 (letter from Paris dated August 8, 1833). Hereafter cited as Bowditch.

WOMEN, MENSTRUATION, AND NINETEENTH-CENTURY MEDICINE *

VERN BULLOUGH AND MARTHA VOGHT

One of the recurrent themes in medical history is the reluctance of physicians to accept new scientific findings. This may well be due to the innate conservatism of medical practitioners and their unwillingness to use patients as guinea pigs for treatment about which they are unsure. Sometimes, too, the reluctance comes because new findings demonstrate that previous practices might have been harmful to the patient; this turn of events is difficult to accept. Often, however, the reluctance is not attributable to any medical reason but results when new findings upset the emotional attachments, some would say political prejudices, that most physicians hold and which have little to do with medicine itself. This paper is concerned with this kind of opposition.

When the belief structure of the physician is threatened, even in fields outside of medicine, he often uses his medical expertise to justify his prejudices and in the process strikes back with value laden responses which have nothing to do with scientific medicine. Unfortunately, since he is assumed to speak with authority, his response, perhaps as he intended, has influence far beyond that of the ordinary men. One of the best examples of this is the controversy over the physical disabilities of women which took place in the last part of the nineteenth century as women began to demand more education, greater political equality, and to challenge many of the male stereotypes about woman's place. Since medical practitioners were almost all men, and many of them were hostile to any change in the status quo in male-female relationships, they inevitably entered the struggle with what today appears not only as ludicrous arguments, but which even in the period they were writing were not based upon any scientific findings and in fact went contrary to those findings. This is particularly true in their understanding of the consequences of menstruation.

During the last part of the nineteenth century American physicians toyed with several theories of menstruation. In general they were aware of the

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theories of John Power of London who postulated that ovulation and menstruation were connected. American medical journals also made an attempt to keep their readers current on the English researches which tended to support his theories.¹ At the same time, however, many physicians seriously discussed various folk theories about menstruation, retaining with little change in content ideas which appear in the Hippocratic *corpus* or in Aristotle. Many still held that it was the effect of the moon upon women that caused them to menstruate, others held that the fetus was formed from the menstrual flow. The popular underground pseudonymous marriage manual, *Aristotle's Masterpiece* held that menstruation was due to the casting out of the excess blood which would have nourished the embryo if pregnancy had occurred.² Even as late as the 1890s when the first experimental work leading to the understanding of human hormones was taking place, American physicians were still discussing the question of whether the ovaries triggered menstruation, whether the uterus was an independent organ and performed the menstrual function without external aid, or whether the Fallopian tubes were responsible for the monthly flow.³ A few, however, perhaps influenced by the Victorian disgust at the sexual and reproductive processes, considered menstruation a pathological condition. These physicians believed that in Paradise humans had reproduced asexually and it was only when man had fallen that perfection had been replaced by the evil of sex. An article in the *American Journal of Obstetrics* in 1875, for example, argued that menstruation was pathological, proof of the inactivity and threatened atrophy of the uterus. As evidence of its unnaturalness the author claimed that conception was most likely when intercourse occurred during the monthly flow, but intercourse at such times was dangerous and forbidden because the menstrual blood was the source of male gonorrhea. Since menstruation therefore stood in the way of fruitful coitus it obviously had not been ordained by nature.⁴

¹ John Power, *Essays on the Female Economy* (London: Burgess and Hill, 1831); G. F. Girdwood, "Theory of menstruation," *Lancet*, 1842-3, i: 825-30; J. Bennet, "On healthy and morbid menstruation," *Lancet*, 1852, i: 35, 65, 215, 328, 353.

² Aristotle (pseud.), *The Works of Aristotle in Four Parts*, containing I. *His complete Master-piece*;... II. *His Experienced Midwife*;... III. *His Book of Problems*;... IV. *His Last Legacy*... (London: published for the bookseller, 1808), p. 126.

³ See M. M. Smith, "Menstruation and some of its effects upon the normal mentalization of woman," *Memphis Med. Monthly*, 1896, 16: 393-399; C. Frederick Fluhmann, *Menstrual Disorders, Diagnosis and Treatment* (Philadelphia: W.B. Saunders, 1939), pp. 17-26.

⁴ A. F. A. King, "A new basis for uterine pathology," *Am. J. Obst.*, 1875-76, 8: 242-43.

In 1861 E. F. W. Pflüger demonstrated that menstruation did not take place in women whose ovaries had been removed, a finding which reinforced the ovarian theory but did not end the debate since Pflüger himself in 1863 hypothesized that there was a mechanical stimulus of nerves by the growing follicle which was responsible for congestion and menstrual bleeding. This led him to believe that menstruation and ovulation occurred simultaneously.⁵ It was not until the twentieth century and a better understanding of the hormonal process that the timing of ovulation was fully understood. In the meantime, many American physicians accepted Pflüger's theory that nervous stimulation triggered menstruation and it was this belief which led large numbers of physicians to express opposition to any emancipation of women.

This paper is not the place to discuss the movement for female emancipation but even a brief synopsis must point out that women were much more assertive of their rights in the last part of the nineteenth century than earlier. Though traditionally women in the United States had received some sort of primary education, if only to learn to read the *Bible*, they had been denied entrance to any of the grammar schools or colleges. In 1783, for example, twelve-year-old Lucinda Foote was examined for admission to Yale and found capable of giving the "true meaning of passages in the *Aeneid* of Virgil, the *Select Orations* of Cicero and the Greek *Testament*." She was, however, declared unqualified to enter the college because of her sex⁶ Physicians of the time were generally more inclined to favor female education than oppose it. Perhaps the best example is Benjamin Rush. He urged female education on the grounds that it would allow women to better fulfill their familial responsibilities, be less prone to superstition, have talent in managing their family's affairs, and be better teachers for their sons. Rush also pointed out to his fellow males who might be somewhat hesitant to accept his ideas that the ignorant were the most difficult to govern and an educated wife could, by virtue of her education, be more easily shown the wisdom of her husband's orders and decisions.⁷ It was only later that a significant portion of the medical community appear in opposition to female education.

During the first part of the nineteenth century the female academies

⁵ E. F. W. Pflüger, *Ueber die Eierstöcke der Säugethiere und des Menschen* (Leipzig: Engelmann, 1863).

⁶ Thomas Woody, *A History of Women's Education in the United States*, 2 vols. (New York: The Science Press, 1929), II, p. 137.

⁷ Benjamin Rush, *Essays, Literary, Moral and Philosophical* (Philadelphia: Thomas & Samuel Bradford, 1798), pp. 75-92.

and seminaries began to multiply and in the 1830s full-fledged colleges were proposed for women, and Oberlin College opened its doors to both sexes.⁸ Soon medical schools also found themselves under attack for failure to admit women, and a few women such as Elizabeth Blackwell managed to receive medical training. Most women, however, turned to nursing as an alternative to challenging the male bastion of medicine,⁹ but it is perhaps no accident that medical opposition to feminine emancipation began to increase as the physician himself felt threatened by the few women attempting to enter medical school. About 1870 several medical writers began proclaiming that education for women was a disastrous error since girls between twelve and twenty could not stand the strain of higher education, in large part because of the physiological strains which puberty and ovulation put upon them.

One of the first and by far the most influential theorist of menstrual disability was Edward H. Clarke, a professor of materia medica at Harvard and a fellow of the American Academy of Arts and Sciences. In 1873 he wrote that though women undoubtedly have the right to do anything of which they are physically capable, one of the things they could not do and still retain their good health was to be educated on the pattern and model of men. He held that while the male developed steadily and gradually from birth to manhood, the female, at puberty, had a sudden and unique period of growth when the development of the reproductive system took place.¹⁰ If this did not take place at puberty, it would never occur, and since the system can never do "two things well at the same time," the female between 12 and 20 must concentrate on developing her reproductive system. To digest one's dinner, he held it was necessary to temper exercise and brain work; likewise, during the growth of the female reproductive system, brain work must be avoided. The overuse of the central nervous system would overload the switchboard, so to speak, and signals from the developing organs of reproduction would be ignored in favor of those coming from the overactive brain. Even after puberty females were not to exercise their minds without restriction because of their monthly cycles. The menstrual period was vital, Clarke held, and any mental activity during the "catamenial week" would inter-

⁸ Woody, *History of Women's Education*, II, p. 231.

⁹ See Vern and Bonnie Bullough, *Emergence of Modern Nursing* (New York: Macmillan, 1969), *passim*.

¹⁰ Edward H. Clarke, *Sex in Education; or a Fair Chance for Girls* (Boston: James R. Osgood & Co., 1874), pp. 37-8.

fere with ovulation and menstruation,¹¹ the necessary physiological processes of being female.

He then proceeded to demonstrate, at least to his own satisfaction, that higher education left a great number of its female adherents in poor health for life. He was alarmed that the increase in the number of young women being educated would so deplete the population that within fifty years "the wives who are to be mothers in our republic must be drawn from trans-Atlantic homes."¹² For proof of his assertion he offered as evidence the cases of young women he had as patients whose ill health he ascribed to hard study. One had entered a female seminary at 15 in good health but after a year of application to her studies and following the routine of the school, which included standing to recite, she was pale and tired "every fourth week." A summer's rest restored her but by the end of the second year she was not only pale but suffering from an "uncontrollable twitching of a rhythmical sort" in the muscles of her face. On the advice of the family physician she was taken for a year of travel in Europe and returned cured. Unfortunately she then returned to school where she studied without regard to her menstrual periods and, though she graduated at nineteen as valedictorian, she was an invalid and it took two years in Europe for her to recover. Her illness, according to Dr. Clarke's diagnosis, resulted from making her body do two things at once. He reported the case of another young woman, a student at Vassar, who began to have fainting spells and suffer painful and sparse menses. Inevitably she graduated at nineteen as an invalid, suffering from constant headaches. Dr. Clarke believed this was because she suffered from the arrested development of her reproductive system due to her education. As evidence he claimed she not only had menstrual troubles but was rather flat chested. Another young college woman came to him with a history of diminishing menstrual flow, constant headaches, mental depression, acne, and rough skin. Eventually Dr. Clarke committed her to an asylum.¹³ It was also of some concern to Dr. Clarke that young women of the lower classes were expected, during puberty, to take jobs in domestic service or in factories. In his practice he had seen evidences of ill health among such women which he blamed upon their work. Yet, he concluded that labor in factory at a loom was far less damaging than study to a woman, because it worked the body, not the

¹¹ *Ibid.*, pp. 40-1.

¹² *Ibid.*, p. 63.

¹³ *Ibid.*, pp. 65-72.

brain. It was primarily brain work which destroyed feminine capabilities.¹⁴

Women who concentrated upon education rather than the development of their reproductive system also underwent mental changes, according to Clarke. Not possessing the physical attributes of a man, they also tended to lose the "maternal instincts" of a woman to become coarse and forceful. By educating women, said Dr. Clarke, we were creating a class of sexless humans analogous to eunuchs. To solve this alarming problem, he recommended strict separation of the sexes during education, particularly after elementary school. He urged that female schools provide periodic rest periods for students during their menstrual periods. The young women would also have shorter study periods since they were by nature weak and less able to cope with long hours.

A girl cannot spend more than four, or, in occasional instances, five hours of force daily upon her studies, and leave sufficient margin for the general physical growth that she must make. . . . If she puts as much force into her brain education as a boy, the brain or the special apparatus (i. e., the reproductive system) will suffer.¹⁵

He held up as models some reports on German education, showing that menstrual rest for female students was practiced.¹⁶

Though there was immediate unfavorable reaction to Clarke's thesis, it still became widely accepted. His critics pointed out, for example, that Clarke had done no scientific study on the matter, that he generalized from a few clinical cases in his own practice, and that his description of periodic rests in European education were totally untrue. One critic commented that "Dr. Clarke has thrown out to a popular audience a hypothesis of his own, which has no place in physiological or medical science. . . . His whole reasoning is singularly unsound."¹⁷ There was some suspicion that Clarke's argument was designed to end speculation at Harvard about admitting female students.¹⁸ Nevertheless, the popularity of his message is indicated by the fact that within thirteen years, *Sex in Education* went through seventeen editions.

¹⁴ *Ibid.*, p. 133.

¹⁵ *Ibid.*, pp. 156-57.

¹⁶ *Ibid.*, pp. 162-81.

¹⁷ George F. and Anna Manning Comfort, *Woman's Education and Woman's Health* (Syracuse: Thomas W. Durston & Co., 1874), p. 154.

¹⁸ G. Stanley Hall, *Adolescence, Its Psychology and Its Relations to Physiology, Anthropology, Sociology, Sex, Crime, Religions and Education*, 2 vols. (New York: D. Appleton and Co., 1904), II, p. 569.

Those physicians who followed Clarke tended to exaggerate his position and to ascribe far more harm to the education of women than even he had dared. T. S. Clouston, a physician of Edinburgh, Scotland, wrote a lengthy series for the *Popular Science Monthly* to demonstrate to the public the dangers of the education of females. He pointed out that it was medically accepted that the "female organism is far more delicate than that of men; . . . it is not fitted for the regular grind that the man can keep up." Overstimulation of the female brain causes stunted growth, nervousness, headaches and neuralgias, difficult childbirth, hysteria, inflammation of the brain, and insanity. The female character is likewise altered by education; the educated woman becomes cultured, but "is unsympathetic; learned, but not self denying." Clouston admitted the weak point of his argument, "that it is not founded on any basis of collated statistical facts," only based upon observations of physicians of their own patients. Nonetheless, he expressed the hope that research to gather the facts would be carried on in the future.¹⁹

This, in fact, began to happen but the results were not what Clouston anticipated. The Massachusetts Labor Bureau made the first report on the health of American college women based upon statistical evidence and not the "haphazard estimate of physicians and college instructors."²⁰ The results indicated that of 705 college women, 78% were in good or excellent health, 5% were classed as in fair health, and 17% were in poor health. When these women had started college, 20% were in poor health. The report concluded that there were no marked differences in health between college women and the national average.²¹ John Dewey, in his analysis of the report, decided that worry over personal matters was more harmful to health than overstudy.²²

In spite of the publicity given the study, there was little change in attitudes among those who believed women and education made a dangerous mixture. In the same year that it appeared, Henry Maudsley wrote in *Sex in Mind and in Education* that the concurrence of puberty and higher education meant that mental development was accomplished at the expense of physical. While acknowledging that there were no

¹⁹ T. S. Clouston. "Female education from a medical point of view," *Popular Science Monthly*, (Dec., 1883; Jan., 1884), 24: 322-33.

²⁰ John Dewey, "Health and sex in higher education," *Popular Science Monthly*, March, 1886, 28: 606.

²¹ Annie G. Howes, et al, *Health Statistics of Women College Graduates: Report of a Special Committee of the Association of Collegiate Alumnae* (Boston: Wright & Potter, 1885), p. 9.

²² Dewey, "Health and sex in higher education," 611.

facts to provide an answer to the question—what are the effects of coeducation?—he nonetheless answered the question by citing Clarke and declaring that girls educated in the traditional ways were losing “their strength and health.” The imperfect development of the reproductive system interfered with the development of the feminine character, leaving the educated woman without a sufficiently feminine frame of mind. The education of women must be designed to prepare them for their proper sphere.

It will have to be considered whether women can scorn delights and live laborious days of intellectual exercise and production, without injury to their functions as the conceivers, mothers, and nurses of children. For, it would be an ill thing, if it should so happen that we got the advantage of a quantity of female intellectual work at the price of a puny, enfeebled, and sickly race.²³

Clarke and most of his imitators ascribed to the Pflüger theory of menstruation, but it was not a necessary preliminary to the belief in the physical disability of women. John Goodman, a Louisville physician, believed that the ovular theory of menstruation was untenable. Instead menstruation was “presided over by a law of monthly periodicity,” a “menstrual wave” which affected the entire female being and from whose dictates women could not escape.²⁴ This theory, although in conflict with that of Pflüger, was appropriated to the cause of those who opposed female education. A good example is George J. Engelmann who, in his presidential address before the American Gynecological Society in 1900, expressed the opinion that female schools should heed the “instability and susceptibility of the girl during the functional waves which permeate her entire being,” and provide rest during the menstrual periods. At the same time he said that menstruation was controlled by “physical conditions and nerve influences,” and that the first menses were accelerated by mental stimulation. His observations contradicted those of Clarke, since while Clarke found educated women ceasing menstruation, Engelmann found that mental work increased the frequency of menstrual flow.²⁵ Nevertheless he would agree with Clarke that women could not endure the rigors of higher education.

²³ Henry Maudsley, *Sex in Mind and in Education* (Syracuse: C. W. Bardeen, 1884), p. 14.

²⁴ John Goodman, “The menstrual cycle,” *Transactions, American Gynecological Society*, 1877, 2: 650-62; “The cyclical theory of menstruation,” *Am. J. Obst.*, 1878, 11: 673-94.

²⁵ George J. Engelmann. “The American girl of to-day. The influence of modern education on functional development,” *Transactions, American Gynecological Society*, 1900, 25: 8-45.

J. H. Kellogg, whose *Plain Facts for Old and Young* was responsible for inculcating vast numbers of Americans with the idea that masturbation led to insanity, added also to the public misinformation about menstruation. Part of Kellogg's success was due to the fact that he appeared to be so scientific:

There has been a great amount of speculation concerning the cause and nature of the menstrual process. No entirely satisfactory conclusions have been reached, however, except that it is usually accompanied by the maturation and expulsion from the ovary of an ovum, which is termed ovulation. But menstruation may occur without ovulation, and vice versa.²⁶

He then stated that the first occurrence of menstruation is a very critical period in the life of a female and each recurrence renders her specially susceptible to morbid influences and liable to serious derangements and a female must carefully watch out during these periods.

There is no doubt that many young women have permanently injured their constitutions while at school by excessive mental taxation during catamenial period, to which they were prompted by ambition to excel, or were compelled by the "cramming" system too generally pursued in our schools, and particularly in young ladies' seminaries.

He adds, however, that a moderate amount of study would not be injurious and he had no doubt that a large share of the injury which has been attributed to overstudy during the catamenia was caused by improper dress, exposure to taking cold, keeping late hours, and improper diet. Kellogg also wondered about women workers and felt that female workers should be protected during their periods. He felt it was wrong that women in order to keep their situations were required to be on hand daily and allowed no opportunity for rest at the menstrual period.

In many cases, too, they are compelled to remain upon their feet all day behind a counter, or at a work table, even at periods when a recumbent position is actually demanded by nature. There should be less delicacy in relation to this subject on the part of young women, and more consideration on the part of employers.²⁷

As the movement for female emancipation grew, the physicians who discussed the frailties of the female did so with increasing emotional fervor. The president of the Oregon State Medical Society, F. W. Van Dyke, in 1905, claimed that hard study killed sexual desire in women,

²⁶ J. H. Kellogg, *Plain Facts for Old and Young* (Burlington, Iowa: I. F. Segner, 1882), p. 83.

²⁷ *Ibid.*, p. 86.

took away their beauty, brought on hysteria, neurasthenia, dyspepsia, astigmatism, and dysmenorrhea. Educated women, he added, could not bear children with ease because study arrested the development of the pelvis at the same time it increased the size of the child's brain, and therefore its head. The result was extensive suffering in childbirth by educated women. Van Dyke concluded by declaring that the women who were remembered in history were faithful wives and good mothers such as Penelope, Cornelia, St. Elizabeth; and these would still be remembered when "the name of the last graduate of the woman's college shall have faded from the recollection of men forever."²⁸

Dr. Ralph W. Parsons in the *New York Medical Journal* in 1907 cited many of the above authorities to show that the results of higher education for women could only lead to ill health. He claimed college women suffered from digestive disorders as well as nervous and mental diseases.

The nervous system has been developed at the expense of other bodily organs and structures. The delicate organism and sensitive and highly developed nervous system of our girls was never intended by the Creator to undergo the stress and strain of the modern system of higher education, and the baneful results are becoming more and more apparent as the years go by.²⁹

He offered as proof the fact that in 1902, 42% of the women admitted to New York insane asylums were well educated, while only 16% of the men admitted had gone beyond grade school. He concluded that women "who have undergone the strain of the modern system of education, are much more liable to become victims of insanity than men of the same class."

One of the mental diseases to which college women were prone was the modification of feminine traits of mind. These women developed distaste for the duties of home life, were egotistical, assumed independence of speech and manner, and were not attentive to the advice of their parents. Educated women neglected to cultivate refined speech, had loud voices, laughed with gusto, and sometimes even used slang and profanity. "They do not exhibit," said Dr. Parsons, "the modesty of demeanor which we have been taught to believe is one of the most admirable traits of the feminine character." Colleges encouraged unwomanly behavior. At one school girls publicly appeared on stage in knee breeches, and in the

²⁸ F. W. Van Dyke, "Higher education a cause of physical decay in women," *Med. Records*, 1905, 67: 296-98.

²⁹ Ralph Wait Parsons, "The American girl *versus* higher education, considered from a medical point of view," *New York Med. J.*, 1907, 85: 116.

performance used such words as "devilish" and "damned." Such women as these would never be able to fulfill their female functions, for not only was their reproductive apparatus stunted by education, but no man would ever love them. This was because men had deep sentiment for women with "feminine traits of character with which God intended they should be endowed."

Parsons' solution went far beyond anything proposed in the nineteenth century by medical men. Girls, he decided, should not learn Latin, Greek, civics, political economy, or higher math, for these subjects could be of no use to them in their proper sphere. They should have shorter school hours than boys, and spend most of their time in home economics classes.³⁰

All of these twentieth-century physicians had available to them a careful study on the health of college and non-college women, printed in the *Publications* of the American Statistical Association, 1900-1901. This study, carried out during the 1890s compared college women, not to the "average" woman of the census, as past projects had done, but to a control group of non-college women composed of their own relatives and friends of their own social class. The study found that though college women married two years later than non-college women there was a growing tendency to marry later among both groups. Non-college women had "a slightly larger number of children," but college women had more children per years of married life. There were no differences in problems of pregnancy and mortality of children. The health of the children was roughly equal; although among college educated mothers the researchers felt they detected slightly fewer delicate children and slightly more robust children. The study found no significant difference between the health of the two groups of women before or after college age. Seventy-five percent of the college women had been employed before marriage, while only 34% of the non-college women had had outside employment. The college women chose different kinds of husbands than the control group. Seventy-five percent of them married college men, while their non-educated cousins married a college educated husband in only half the cases. Sixty-five percent of college women married professional men, while only 37% of the non-college women had husbands in the professions.³¹

The physicians who persisted in accepting the theories of Clarke *et al.*

³⁰ *Ibid.*, p. 119.

³¹ Mary Roberts Smith, "Statistics of college and non-college women" *Publications*, American Statistical Association, 1900-01, 7: nos. 49-56, 1-26.

simply ignored such studies. G. Stanley Hall who, though one of the outstanding psychologists of the early twentieth century, strongly believed that woman's place was in the home, simply dismissed the statistical studies as inaccurate. Instead, he felt, physicians who treated over-educated women were more likely to see the true circumstances. Inevitably Hall's classic on *Adolescence* repeated all the fears and superstitions concerning female education. For example, he connected menstruation to mental exercise. As proof he offered the fact that American girls had their first menses at an average of 14 years of age, while European girls were, on the average, 15.5 years of age before menstruation started. This precocity of American girls was "due chiefly to mentality and nerve stimulation," in other words, education. "Education," theorized Hall, "in a temperate or subarctic zone is more productive of precocity than in the south, and if general nervous stimulus is the cause, the same schooling is more dangerous in the city than in the country."³² Hall was heavily influenced by Clarke's concept of rest during the menstrual periods, and suggested that the female, rather than observing the weekly Sabbath, should have rest periods of four successive days per month. These days would be devoted to leisure and religion, since during menstruation the female was inclined "to a natural piety and sense of dependence," which accounted for the fact that women were more religious than men.³³ Women were by nature intuitive, Hall claimed, not mental. By being "bookish" woman lapsed into male manners and fashions, declined from "her orbit," and obscured her "original divinity."³⁴

He believed with Goodman that the ruling factor of female life was periodicity. For most of her life a woman had no alternative but to give way to its dictates, and for this reason special schools should be established for girls. Under no circumstances should coeducation exist, for putting adolescents into the intimacy of the classroom destroyed "the bloom and delicacy" of the girls. Female schools should be in the country, with plenty of places for exercise and privacy. All students should observe the "monthly Sabbath during their menstrual periods, during which time

the paradise of stated rest should be revisited, idleness be actively cultivated; reverie, in which the soul, which needs these seasons of withdrawal for its own development, expatiates over the whole life of the race, should be provided for and encouraged in every legitimate way, for in rest the whole momentum of heredity is felt in ways most favorable to full and complete development. Then woman

³² Hall, *Adolescence*, I, p. 478.

³³ *Ibid.*, I, p. 511.

³⁴ *Ibid.*, II, p. 646.

should realize that *to be* is greater than *to do*; should step reverently aside from her daily routine and let Lord Nature work.⁸⁵

Such opinions as this were unlikely, in 1905, to go unchallenged by the feminists. Martha Carey Thomas, president of Bryn Mawr College, attacked this lyrical report on periodicity as "sickening sentimentality" and "pseudo-scientific." She held that the seventh and seventeenth chapters of Hall's work were more degrading to womanhood than anything written since Michelet's *La Femme*. She recalled her student days, when she was "terror-struck lest I, and every other woman with me, were doomed to live as pathological invalids in a universe merciless to woman as a sex." Now "we know" that it is not "we," but the "man who believes such things about us, who is himself pathological, blinded by neurotic mists of sex, unable to see that women form one-half of the kindly race of normal, healthy human creatures in the world."⁸⁶

Serious research also questioned the point of view Hall represented. One such study hypothesized that if the menstrual cycle had such influence on women, it ought to show up on tests comparing motor and mental abilities of both men and women. When the results were analyzed it was found that none of the efficiency curves correlated with the menstrual cycles and that the males in the tests had varying efficiencies similar to the females rather than being stable and unvarying as had been thought. In fact, the curves produced by the two sexes were indistinguishable when the notations of the menstrual periods were removed. How, asked the researcher, Leta Stetter Hollingworth, were such results to be accounted for when they had such a striking disparity from what had been the accepted scientific position. Two possible explanations were offered. First the scientific and medically accepted facts were not facts at all but traditions carried on by mystic and romantic writers that "woman is a mysterious being, half hysteric, half angel," and this attitude had somehow found its way into the scientific writing. Scientists seeking to justify this had "seized" upon the menstrual cycle as the probable source of the alleged "mystery" and "caprice of womankind." Once formulated, then, the dogma became cited as authority from author to author until the present day. A second possible explanation of the error was that physicians had not based their conclusions upon accurate evidence.

⁸⁵*Ibid.*, II, p. 639.

⁸⁶M. Carey Thomas, "Present tendencies in women's college and university education," Feb., 1908, in William O'Neill, ed., *The Woman Movement: Feminism in the United States and England* (Chicago: Quadrangle Books, 1969), p. 168.

She postulated that normal women did not come under the care and observations of physicians but rather only those with mental and physical diseases. Physicians generalized from these patients, and determined that women were chronically ill. Moreover, once these observations were accepted, experiments to disprove them were difficult since, until the end of the nineteenth century, all investigators were men and the taboo upon mention of the menstrual function made such research next to impossible.⁸⁷

In actuality the explanation is probably far more complex than this. It is quite possible that physicians were simply blind to what was going on and were so prejudiced that they refused to see reality. There is also the possibility that during the nineteenth century young women did have more than their share of menstrual difficulties. One source of such problems was undoubtedly diet. It was generally believed a century ago that certain foods, especially highly flavored dishes and meats, aroused the sexual appetites. It was, accordingly, desirable to regulate the diets of young girls so as to protect them from unhealthy desires, and physicians found that protein deprivation was a successful cure for female masturbation.⁸⁸ Female boarding schools, to minimize sexual interest among their charges, were likely to follow such a prescribed vegetable diet. A study of female higher education in the 1890s deplored the low state of boarding school health, due, it was believed, to diet and lack of exercise, as well as the pressures of the curriculum.⁸⁹

Clelia Mosher, whose research into menstruation among college women spanned several generations between 1890 and 1920, found that girls in the earlier period probably did have greater menstrual difficulties than those in the 1920s. She at first concluded that the reason for this was that during the nineteenth century girls were taught that they were going to be sick during menstruation and the result was a self fulfilling prophecy. She also found, however, that there was a correlation between dress and menstrual difficulties. During the 1890s and the early years of the twentieth century most young women were put into tight corsets, banded

⁸⁷ Leta Stetter Hollingworth, *Functional Periodicity: An Experimental Study of the Mental and Motor Abilities of Women During Menstruation*, Teachers College, Columbia University Contributions to Education, No. 69 (New York: Columbia University Press, 1914), pp. 44, 66, 93, 95.

⁸⁸ John Tompkins Walton, "Case of nymphomania successfully treated," *Am. J. Med. Sci.* 1857, 33: 47-50.

⁸⁹ Anna C. Brackett, ed., *Women and the Higher Education* (New York: Harper, 1893), p. 90.

clothing, and unsupported heavy skirts. This clothing interfered with the respiration, made the abdominal muscles flabby, restricted physical activity, and deformed the body on the same principle that the binding of feet in China did. The result was, Mosher held, chronic disturbances of the organs and prolonged menstrual flow.⁴⁰ She prepared tables correlating menstrual pain among college women with the width and weight of their skirts and the measurements of their waists. Her figures showed that as the skirt grew shorter and skimpier, and the waist larger, the functional health of women improved. In 1894, 19% of the college women were free from menstrual difficulties; in 1915-16, 68% considered their periods no problem. In the earlier period the average skirt was 13.5 feet around the hem, the average waist measurement was twenty inches, and the woman also wore several petticoats, some fifteen pounds of clothing hanging from a constricted waist. By the beginning of World War I women wore their skirts above the ankle, skirts were narrowed, petticoats fewer, and waist measurements had increased by 40%.⁴¹

Such studies did much to ease the traumas inflicted by some of the male medical writers of the last part of the nineteenth century. Increasing reassurance came from the growth in numbers of college educated and career women who seemed none the worse for their years of hard study or work. While the generation of Martha Thomas had been haunted by the "clanging chains of that gloomy little spector," Dr. Edward H. Clarke's *Sex in Education*, several generations of educated women tended to prove that "college women were not only not invalids, but that they (were) better physically than other women in their own class of life."⁴² In part too, the development of the sanitary pad in the aftermath of World War I also freed women from some of the more confining aspects of menstruation. Not all physicians, however, adjusted their thinking to correspond with the latest scientific findings. At the beginning of the twentieth century most sex manuals warned against exciting lives and mental stimulation for pubertal girls.⁴³ Perhaps this was to be expected but, when the same sort of material was still being published thirty years later, it is possible to wonder what motivated the physicians who

⁴⁰ Clelia Duel Mosher, "Normal menstruation and some of the factors modifying it," *Johns Hopkins Hosp. Bull.*, 1901, 12: 178-79.

⁴¹ Clelia Duel Mosher, *Woman's Physical Freedom* (New York: The Woman's Press, 1923), pp. 1, 29.

⁴² Thomas, "Present tendencies in women's college and university education," p. 169.

⁴³ See, for example, William H. Walling, *Sexology* (Philadelphia: Puritan Publishing Co., 1904), p. 207.

wrote it. William J. Robinson's book, for example, in 1931 in its twenty-second edition, still warned that only a minority of women were free from illness during their menstrual periods, and that most should rest at least two days, avoid dancing, cycling, riding, rowing, or any other athletic exercises, and probably postpone travel by auto, train, or carriage.⁴⁴

That some of the medical hesitation to change seems political, a hesitation to accept women as equals, is evident even in the 1970s. After all it was in 1970 that Edgar Berman, previously best known as the friend and physician of Hubert Humphrey, remarked that women could not fill leadership roles because of the influences of their periodicity, that is their menstrual cycles and menopause.⁴⁵ This statement cost him his position in the Democratic Party and made not only him but Humphrey an object of attack by the militant members of women's lib. That the belief still has currency is also indicated by the fact that the first issue of the new woman's magazine *Ms.* found it relevant enough to counter the theory of female periodicity with an article on male cycles and gave hints to women on how to discover whether the men in their life were ebbing or flowing.⁴⁶

This is not the place to argue the existence of male cycles, however, but only to indicate that it is very possible for medical concepts to get mixed up with political and social beliefs. Perhaps this is inevitable since we are human, but it ought to make the physician a little more cautious in distinguishing his biases from his objective findings. In retrospect it does seem that the nineteenth-century physician grew somewhat more shrill in his emphasis on the instability of the female at the very time that women and their male allies were challenging the old stereotypes. A few physicians jumped into the controversy citing their own clinical observations as evidence in ways that today we can only regard as ludicrous. This in fact happened with a whole series of physiological functions and human activities but were particularly harmful when they dealt with such sexual topics as menstruation, masturbation, or birth control. Obviously women are anatomically different from men, and they do have monthly periods, but to generalize from this and a few isolated patients a whole theory of female inferiority seems to be an example of poor med-

⁴⁴ William J. Robinson, *Woman: Her Sex and Love Life*, 22nd ed. (New York: Eugenics Publishing Co., 1931), pp. 80-1.

⁴⁵ *New York Times*, July 26, 1970; *Los Angeles Times*, Feb. 21, 1972.

⁴⁶ Estelle Ramey, "Men's Cycles," *Ms.*, Spring, 1972, 8-15.

ical theorizing. The difficulty with past medical theory, whether good or bad, however, is that it often remains a part of the popular ideology of a later generation. One of the things that women of today have to overcome is some of the mistaken concepts about menstruation and its effect.⁴⁷

⁴⁷ For a survey of some recent research on the topic see Mary E. Luschen and David M. Pierce, "Menstrual cycle, mood and arousability," *Sex Research*, February, 1972, 8: 41-47.

TEXTS AND DOCUMENTS

LETTERS OF A FRONTIER DOCTOR ¹

JACK NORTRUP

In the early 1840s frontier Illinois, western edge of the old Northwest Territory, was just entering a kind of painful maturity. Wild, sparsely settled, crude and rough, the region was groping its way toward civilization. One newcomer remarked that it was "a new World, socially embryonic . . . re-examining and testing first principles, philosophic and organic, social, political, institutional, educational, and religious." ²

The history of Illinois College, the first institution of higher learning in the state to grant a baccalaureate degree, is in many ways a barometric reading of educational trends in the area. In 1843 it opened a medical school, one which endured only a few years; and to this medical school repaired one of the college's own graduates, Mr. Samuel Willard of Alton. Mr. Willard gained no great fame as a physician but he left behind a series of letters which reveal an intently sensitive and honorable human being. Samuel Willard is no charmingly sterile and blandly suave public relations oriented doctor. He is instead uncertain, hopeful, despairing, joyful, meditative. In short, whatever else Samuel Willard was, he was first of all honest with himself.

Samuel Willard was never completely convinced that he should become a doctor. His doubts, expressed often, reveal an impartial intelligence examining the current conditions of the frontier medical profession. The first of his letters is dated January 10, 1846:

Samuel Willard to Dear Mother

Jan. 10, 1846
College Hill

I did not want to study this Winter, and now can hardly go on: at times I have to drop a lecture. . . . The Medical Commencement comes on the 20th of February, and I shall be free. What shall I do then? I want to stop and dissect a month after lectures end, but after that what next?

[He asks them to talk to Dr. Eells about taking him for instruction.] Tell him

¹ All of the letters quoted are from the Samuel Willard *Papers*, Illinois State Historical Society Library, Springfield, Illinois.

² Truman M. Post, ms. quoted in Truman A. Post, *Truman M. Post* (Boston, 1891), pp. 52, 54.

all the facts in the case, that I am now at lectures, and shall not come to him an unlicked cub, but don't tell him too good a story about me. . . .

P. S. Don't be anxious about my cutting myself in dissection for 1st if I should cut me the doctors here can cure me 2nd I am so careful that I shall not cut myself: 3d I am not now dissecting.

Samuel Willard to Dear Mother

College Hill
Feb. 3, 1846

I am beginning to be somewhat relieved in these days from the troubles I had for awhile past: two of our professors have finished their lectures, and I am becoming possessed of no small indifference as to the rest of them. I go or not, just as happens to suit me; indeed it does me no good to go to listen when I don't feel like it: I can't hear anything then.

Samuel Willard to Dear Mother

Feb. 26, 1846

One week ago today finished our Medical term, the Commencement being held in the evening= The day was stormy and cold, but there was a larger attendance than was expected on the evening exercises, which were held in the Methodist Episcopal Church. President Sturtevant delivered an address on Education; on the necessity of general education and training of mind for almost any profession and business of life, and making it manifest especially that doctors ought to know everything, and be very good. Dr. Jones then delivered an address to the class on "The Dignity of the Profession."

The evening was enlivened by instrumental music of my getting up which seems to have delighted everyone that heard it.

Some of the Medical Faculty here for example Dr. Jones and perhaps Dr. Miller will be displeased with me if I chose Dr. Reed or Dr. Eells as a preceptor, but they are very foolish= I want to hear more about medicine than they can tell me! and Dr. Reed can give it me. I expect that I shall disappoint some of their expectations because in medicine as in some other matters, I am too sceptical to believe all that is told me till I take a look at it and hear the other side.

Apparently, despite his doubts, Willard made satisfactory progress. Among the papers are two certificates:

Quincy, Ill.
Sept. 30, 1847

This certifies that Doctor Samuel Willard has pursued the study of medicine with us during the past year, making extraordinary proficiency: and that his moral character is unexceptionable.

Nichols and Birdsall

This may certify that M. Samuel Willard has dilligently and successfully studied Medicine and Surgery [?] and dissection during the past year.

Nichols and Birdsall

Yet "mother" continued to worry and the above Dr. Nichols was a catalogue of curiosities:

Samuel Willard to Dear Father

Nov. 3, 1847

... my occupation is by no means as dangerous as mother thinks. [Remarks that Dr. Nichols is very easy to get along with if one does not "take offence at his oddities," and treats him with kindness. Nichols isn't "jealous or suspicious" but is "lax" in "money matters," and is extremely trusting—pays no attention.] The Doctor will have yarns enough to keep you and himself in good humor for at least three years! !

By 1847 Willard is back for a second term in the Medical school.

Samuel Willard to——

Jacksonville
Nov. 23, 1847

Mr. Ainsley of Upper Alton had an operation performed on his eyes before the class: he has been blind for some years past, having had a web grow from the corner of his eye over the pupil. [Ainsley is going home next day—5 days from the time of the operation] able to see, not yet as well as ever; but I suppose he will do that before long. [All practice was, however, lamentably not as proficient. Willard, irked at his own profession remarked] She died of Typhus fever; I do not know but I may add,—of a doctor too.

[At the same time his roommate is called home because his partner is] Taken ill with rheumatism of the heart and was expected to die soon—in this disease life is uncertain for any time—a person may die almost instantly after it seizes him.

Samuel Willard to Mrs. A. C. Willard

March 2, 1848

[Speaks of his roommate Wing's wanting to deliver a lecture] on the use by inhalation of Ether and Chloroform. [Wing was too busy but Willard who had aided him in the preparation consented to replace him.] I had to digest and arrange a chaos of statements and reasonings, and try to get clear views. [Lectured from notes] With ease to myself beyond my expectations. [The following day was the "ordeal" of examinations and since this was done by alphabetical order Willard was last. He finished at three P.M.] Dr. Adams soon informed us that we were all accepted. We all knew that this would be the result—beforehand; for eight diplomas duly filled out and marked had been seen at Dr. Adams's the evening before and the one who saw told us all.

Selection of a location for his practice was a problem. The larger cities had advantages but he didn't want to move to St. Louis. More money would be the only reason for such a move but Willard has singular views of money. The move would be:

in the mere *hope* of becoming richer than I am likely to be at Quincy. It will be merely for the sake of putting more money in my pocket... [Says he is better off in a small place. Makes friends only by degrees. He hasn't "the tact and talents" for success "with people at large."]

My attachments . . . are personal to the circle of friends, which I have, rather than local, to such and such houses, streets, hills, or prairies. . . .

As to entering into the medical profession here, there are several obstacles. First of all, I was so unfortunate as to come to the conclusion from my medical studies . . . that either there is no true art and science of healing, or else that I am not capable of distinguishing it amid the confused mass of the guesses of all who have claimed knowledge of medicine from the days of Aesculapius to the present. . . .

[However, St. Louis prevailed because Dr. Prince would give him] office room, fuel and lights and a bed, for such assistance as I can render him in his lectures, etc. [Prince also proposed they board themselves to lighten expenses.]

If Samuel Willard was disdainful of money, he had chosen wisely in the city of St. Louis. Doctors there moved in a remorseless and evenly distributed condition of poverty.

Samuel Willard to———

Nov. 20, 1849

I have nothing to do here, and a temporary absence won't hurt my precious "business."

Feb. 5, 1850

Samuel Willard to Dear Mother

[It was a terrible mistake in coming to St. Louis he reveals. He really wanted to be an editor] And even low wages is better than "professional *dignity*" without employment and with pinching and poverty, and little or rather absolutely no prospect of an improved condition.

[For the 145 day period Willard's account stood as follows:]

\$ 5 Medical Advice (\$1.51 of that at Quincy)

7.55 piano tuning

4.80 for assistance to a man

Total \$17.35 and almost half of this . . . from my musical abilities

Dr. Prince with all the advantage he has of no inconsiderable reputation and of having been here a year and a half, [had to leave his boarding house, and, except for dinner, board himself because he couldn't stand the expense and also had rented out one of the two rooms he occupied. His income had been \$700 last year, but part of that from his lectures.] He has considerable practice amongst the poor, but that pays him nothing. . . . A highly educated physician came here about the time that I did, having letters of introduction and recommendation to influential persons; he has just left the city, having had not one patient during his stay. . . . [Does not suppose that in two yrs. time his income would reach \$300 per year.] I shall regard it as fortunate for me beyond rational expectation, if the year 1850 puts \$100 in my pocket; two months of it have given me \$1.50, enough to pay my washing to this date. I must leave my profession again—and if I do, nothing will tempt me back to the hated business. I have not bought me a cloak for I have not dared to spend money enough. I do not believe that I am meant to be what my present position makes me almost entirely—a useless block in God's world.

With conditions in St. Louis so unpromising, Willard soon emmigrated back across the Mississippi into Illinois again, where he set up practice with his old college roommate, Wing. There Willard was more successful but still unable to like medicine. Even dissecting at Medical school made him sick.³ He could never immunize himself against the daily pain and tragedy which were a part of his profession. He brooded over his patients.

Samuel Willard to——

May 23, 1850
Collinsville

[I] Went with Wing to set a broken bone of 8 yr. old boy who had been kicked by a horse—thus breaking the boy's lower jaw—jaw traversed by two fractures, and his lip cut, and a hole in his cheek near the lower edge of the jaw, from which place we picked out a tooth, an eyetooth.

[Often practice was much more tragic than that of "dentistry." On another occasion Willard reports that there was the quick step of a horse and a man called out to "Come quick for God's sake. . . just take my name and ride as fast as you can." The man's fourteen year old son had been treated the day before by Wing for the chills. Wing thought the child might be having "a chill of that terrible kind called congestive." Willard got brandy saddled up and rode away. Arriving at his designation, "I went over the fence, and ran into the house. 'There the Doctor's here!' I heard Mrs. Guthrie say, as I stepped into the entry."]

Entering the room in which I heard voices and the sound of steps, I saw everything in confusion, the children crying, Mrs. Guthrie stepping anxiously round, and Wing standing by the bedside where the motionless patient lay, and with a look of surprise, [illegible] and anxiety. "Have you any instruments?" "No, what's the matter?" "He was choked and I wanted to open his throat, but had nothing but my knife: I believe he's dead." As Wing was speaking I had thrust my fingers into the boy's throat, but felt no obstruction; with the last words I bared his breast and laid my ear upon it, on the left side; There was no sound within, no motion, the heart was silent and still—the boy was dead!

He was alive when Wing had reached the house. Wing saw at a glance that there was some obstruction to the circulation and respiration, and with the idea of the malignant chill in mind still, had instantly prepared a medicine stimulant to respiration and circulation. The patient sat in a chair gasping and struggling for breath and Wing saw that his first tho't was in error and that assistance if of any avail must be surgical. He had laid the fainting boy upon the bed, and said to Mr. Guthrie . . . that there was no hope, but perhaps he could open his throat, with his penknife. Mr. Guthrie misunderstood him and answered him, "You'd better wait till he's cold! he's my last boy!"—having understood Wing to speak of cutting in to see what was the matter, as in a post-mortem examination. Before Mr. Guthrie was made to understand that the object was to save him, it was too late, and at any rate Wing's knife would not have been sufficient to pierce the tough windpipe.

³ Samuel Willard to [?], May 26, 1848.

Questioning Mrs. Guthrie, we gradually got circumstances sufficient to form our judgment of the cause of this sudden death. He had suffered with soreness of throat and difficulty of breathing during the forenoon, which latter system became distressing only just before his father started for the doctor. Briefly, he had inflammation of the larynx, or top of the windpipe; the disease of which Washington died, and if Frederic will read Watson's forty-fifth lecture on Laryngitis, he will understand and can explain to you the cause and mode of the sudden death, which is briefly, that by the swelling of the organs and tissues of the part, and by spasm, the orifice is closed to the entrance of air, in which case the only help is by incision below the affected part.

[Mrs. Guthrie was anxious for a post mortem but the father did not want the boy "disfigured" and would permit only a two inch cut; but was finally prevailed upon to agree. Another child was] affected with worms, and I gave him a Vermifuge. [With Mrs. Guthrie's son William] a severe inflammation of the brain had lighted up during the night, and we had but little hope of his life, [Willard visited him four times during the day but he died.]

This is the unsuccessful part of our week's work...meanwhile with another patient on the same days we were unexpectedly successful.

[The "riding and physical exertion" doesn't exhaust him] but such cases [as those lost] excite me, and by their anxiety and ill success make me depressed the next day, and both have caused me a headache.

Samuel Willard to Dear Father

July 4, 1850

...responsibility in cases where it is hard to tell what is the matter or where it is hard to tell what will do any good, or whether the patient will get well at all—such responsibility affects my spirits and health more than anything else. [There was a] difficult case of a boy with inflammation of the bowels; this case affected me as heat does a thermometer, my feelings would rise and fall with the boy's prospects. He is now well again, unless he brings on a relapse by error in diet. That is a disease in which I should not dare to trust Nature or Homoeopathy, for even if the patient got well it would be with such results from the early stages of the disease as would torment him all life long; the free motion so necessary to his bowels would be interfered with by the formation of false membranes and these sometimes occasion strangulation of the bowels by getting some loop of them entangled, which with almost or quite positive certainty proves fatal. And on Friday last, I rode 8 miles to see a case in which neither the natural powers, nor the homoeopathic method...could avail, and our treatment may be as unsuccessful. In the lower part of the bowels on the right side is a sudden change in the structure and character of the intestine; it grows large and the smaller bowel is separated from the lower and larger by a valve, which permits no return of what has passed it. The intestine takes a turn here nearly or quite at a right angle, and there is quite a pouch near the valve.

Fecal matter sometimes collect in this pouch and in the beginning of the large intestine, grow dry and hard excite irritation and inflammation perhaps: inflammation may extend and prove fatal, or an abscess form and burst internally causing fatal inflammation; or the offending mass may be got out of the way by

the natural or provoked action of the bowel; if it gather too large nature doesn't move it [He diagnosed the case, prescribed a "purgative to dissolve and expel the mass" and left with word to notify him should the patient not be better the next day. The family instead waited ninety hrs. while the patient, a twenty-year-old woman, grew increasingly distressed and feverish.]

"Remove the cause of disease" is our principle of medication; This homoeopathy? utterly as an "ignis fatuus" (Dr. Gray's words) . . . and Naturalism or Expectancy neglects it. Homoeopathy . . . would meet the symptoms, and soreness, fever etc. Naturalism would let it alone and wait for what might come. Alleopathy says, it is better to urge the expulsion of this cause of disease even by the increase of irritation and pain. . . .

Samuel Willard to Dear Father

Sept. 8, 1850

[I] rode to Sand Prairie (4 or 5 miles West and a little north) and prescribed for ten persons in one house [On Tuesday I rode to Caseyville] and prescribed for six in one room, Irishmen all [Wednesday I] went six miles into the Bottom and prescribed for two French women; one of them I did not see and prescribed on her husband's description of the case [she being so afraid of doctors that she would run from the room at the sight of one.]

[A leading citizen] taken with pleurisy, which is no trifling disease. [I went back to Sand Prairie where] I have the painful fact evident to me that my patient there, a lad of 16, is injured by an ordinary dose of quinine, given for his ague, by me; such a dose as we have probably given over a hundred of this season. . . .

[Sept. 9]

[With the pregnant lady patients] I frequently find my bachelorship in my way. [A patient who suffered abortion went to Dr. Strong] desponding in spirit, and has not much faith in medicine, so that he neither lets his patient entirely alone, nor uses medicines decidedly enough to get their best effect if used. . . .

Dr. Strong easily gives up hope for his patients and is discouraged when there is no need of it. . . . I get woefully discouraged at times but believe I am succeeding remarkably well here . . . but the feeling of responsibility sometimes weighs me down awfully and I feel as if I would run away if I could honorably.

Samuel Willard to dear Mother

June 23, 1851

Collinsville

[Area is having] severe [illegible] of diarrhoea, dysentary and cholera mark[?]: the latter as much to be feared as the Pestilential Cholera: Wing says that the . . . preparatory stages of it are more difficult to control than in 1849.

Samuel Willard to dear Father

June 28, 1851

a very sickly time here; not cholera but a tendency to disease of the bowels which may turn out a severe dysentery, an unmanageable diarrhoea or sudden, violent and often fatal cholera, and these may appear in quick succession or mingled, on the same person.

Samuel Willard to Dear Father

May 25, 1852

The cholera is a disease which I regard with absolute dread:-it seems to me [torn] Magendie well described it as a disease the first step of which[torn]—death: physician has little more he can do than stand by and watch the patient die.

It was this tragic condition of affairs, being capable of only standing by to watch a patient, unable to save him from either pain or death which repeatedly eroded Willard's somewhat tentative faith in his own profession. At some point he despaired of his medical career enough to leave it. He saw service as a surgeon in the Union Army during the Civil War, but his antipathy to medicine grew more and more pronounced. His subsequent career was that of a history teacher in the public schools of Chicago.⁴ Yet, Samuel Willard could never quite escape from his abandoned first love. As a very old man, he returned again and again to write about and lecture upon the medical profession. It was ironic that he loved his profession less because he loved his patients more.

⁴ Charles Rammelkamp, *Illinois College: A Centennial History* (New Haven, 1928), p. 83.

MEDICO-HISTORICAL NEWS AND ACTIVITIES

CORRESPONDENCE AND REPORTS

DOROTHY SCHULLIAN'S RETIREMENT

On June 30, 1972, Dorothy May Schullian retired from the curatorship of the History of Science Collections in the Cornell University Libraries. The *Bulletin* takes the occasion to pay tribute to her services in that capacity and in her previous positions in the National Library of Medicine, and also to her scholarly work as author, editor, translator and reviewer, particularly in the field of the history of medicine.

Miss Schullian was born in Lakewood, Ohio, in 1906, took her first degree at Western Reserve University in 1927, and her doctorate in Latin at the University of Chicago in 1931. She was a fellow of the American Academy in Rome for several years. She taught at Western Reserve University and at Albion College. In 1944 she joined the staff of the Cleveland Branch of the Army Medical Library as assistant curator of rare books. Becoming successively curator then assistant chief, and finally chief of its History of Medicine Division, she remained through that Library's period as Armed Forces Medical Library and into its present period as National Library of Medicine. The story of the Library, from its beginning more than a hundred and fifty years ago as the "Library of the Surgeon General's Office," is most vividly told in a two-installment article which she and Frank B. Rogers published in 1958. In 1961 she entered upon the position at Cornell from which she has now retired.

She is a member of many learned societies, a past or present officer of several, and is a fellow of the International Academy of the History of Medicine. She is a long-time member of the American Association for the History of Medicine and twenty years ago at its annual meeting in Columbus, Ohio, she gave the Fielding H. Garrison Lecture, on "An Introduction to the History of Medicine, 1498."

The bibliography below is approximately complete in sections I-III, but section IV contains only a selection from her reviews—roughly a fourth of them. And the bibliography is of course in other respects a quite incomplete record of her scholarly activity. It omits—for two examples out of many—the facts that she was guest editor of the January 1945 issue of the *Bulletin of the Medical Library Association* and that she made a descriptive study, illustrated with rubbings and tracings, of the Cleveland Medical Library's collection of books from the library of the Renaissance physician Nicolaus Pol, which is bound and shelved with the collection as a guide to it. And it omits the many works whose authors in their prefaces acknowledge her generous assistance.

Enviably as the bibliography is, and useful as we hope the readers of the *Bulletin* will find it, those of them who are readers also of the *Journal of the*

History of Medicine and Allied Sciences will be especially glad that, in retirement, she continues as the genial editor of its "Notes and Events." It is doubtful if any historical journal has a department more promptly turned to and more faithfully read than hers. It began as "Notes & Queries" in the *Journal's* first issue in January 1946. I was its first editor and she was its most frequent contributor and virtual co-editor. After a year and a half, Ralph H. Major succeeded me. With the Autumn 1951 issue she became co-editor with him, and since January 1955 she has been sole editor. In some introductory paragraphs of "Retrospect and Prospect" in April 1956, she expressed misgivings about the diminishing frequency of queries and of answers thereto, and in January 1957, under the heading of "Plastic Surgery," she announced the change of the department's name to "Notes and Events."

The appended bibliography is not the record of a career terminated by retirement, but a progress report of one still in full course. Her edition of the correspondence of the papal physician, Giorgio Baglivi (1668-1707), is in press. Other works are in varying stages of advancement, and there will be others after them. Readers of the *Bulletin* will join its editor and me in wishing her long years of health, strength, and leisure, and in looking forward to the further fruits of her researches. May there be frequent sojourns in her beloved Italy, where the source materials for so much of her work are found!

Max H. Fisch

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ANNOUNCEMENTS

DEDICATION OF THE WANGENSTEEN HISTORICAL LIBRARY
AT THE UNIVERSITY OF MINNESOTA

Dr. Wangensteen and President Malcolm Moos cutting the ribbon
at the dedication of the Wangensteen Historical Library.

On Tuesday 21 November 1972 the Owen H. Wangensteen Historical Library of Biology and Medicine was dedicated at the University of Minnesota. The dedication ceremony began at 3:30 p.m. with brief speeches by Dr. Leonard G. Wilson, Professor of the History of Medicine, Mr. Glenn Brudvig, Biomedical Librarian, Mr. John Yngve of the Board of Regents of the University, and Dr. Lyle French, Vice-president for Health Sciences Affairs. President Malcolm Moos presented Dr. Wangensteen with a citation, and Dr. Wangensteen himself spoke. Afterwards there was a reception in the library.

Dr. Owen H. Wangensteen has been the driving force behind the development of the historical collections in biology and medicine at Minnesota into an outstanding library of more than 20,000 volumes. In 1964, largely through Dr. Wangensteen's efforts, the fifth floor was added to Diehl Hall to provide space for the historical collections of the Biomedical Library. On the fifth floor in addition to the book stacks there is a reading room, an exhibit and reception area,

a lecture room, work room, offices for the library staff and the Department of the History of Medicine, and studies and carrels.

The library collections are particularly rich in American medicine, anatomy and surgery, ophthalmology, and cardiology. There is a fine collection of sixteenth-century herbals and of writings by and about Linnaeus, as well as a broad general representation of early works in medicine and the biological sciences.

WELLCOME UNIT FOR THE HISTORY OF MEDICINE
CAMBRIDGE UNIVERSITY

As a result of a grant from the Wellcome Trust a new unit for research and teaching of the History of Medicine has been established at the University of Cambridge. The scope of its activities includes historical studies of the scientific basis of medicine and of its conceptual and social relations. One of its aims is to integrate work in the History of Medicine with the existing program in the Department of History and Philosophy of Science, of which the Unit forms a part.

The teaching program began in October 1972 and offers a series of lectures and discussions for third-year students in History and Philosophy of Sciences as well as for medical studies. A bi-weekly series of seminars is also offered. There are plans to create a special program in the History of Medicine for third-year medical students in the Medical Sciences Tripos. The Unit sponsors public lectures and research seminars for the medical community and has further plans for research and teaching when the Clinical Medical School is established in Cambridge.

Facilities are available for post-doctoral research on specific projects as well as for graduate studies leading to the Diploma and/or the Ph.D. The Unit can also provide advice for those who need to apply for graduate studentships and research fellowships. For information write to Dr. Robert M. Young, Wellcome Unit for the History of Medicine, 4 Bene't Place, Lensfield Road, Cambridge, England CB2 IEL.

NATIONAL NEWS

Albert Einstein College of Medicine

A new Department of the History of Medicine has been established at the Albert Einstein College of Medicine of Yeshiva University, Bronx, N.Y. Dr. Helmuth Nathan, who has taught the subject at the College for 17 years, was appointed first professor and chairman of the department. The teaching program includes weekly lectures (21 each term), guest lecturers, and bimonthly dinner meetings to which faculty members and guests are invited.

American Institute of the History of Pharmacy

The annual meeting of the A.I.H.P. is scheduled for July 23-25, 1973, in Boston, in conjunction with the meeting of the American Pharmaceutical Association.

American Medical Writers Association

The Association has announced a new journal for medical writers and editors. The journal, *Medical Communications*, will be published quarterly and will feature articles by both members and non-members. Requests for subscriptions (\$5 per year) should be sent to American Writers Association, 9650 Rockville Pike, Bethesda, Md. 20014. Proposed articles should be submitted to the editor, Mr. Byron T. Scott, 166 E. State St., Athens, Ohio 45701.

Boston

The Ad Hoc Committee on the History of Medicine of the Boston University Medical Center and the Boston Medical Library have organized a film festival, "Modern Medicine in Perspective," featuring, through films and discussions, a look at medicine—past, present, future. Ten programs have been scheduled beginning January 17. A complete program may be obtained from the Chairman of the Committee Dr. George E. Gifford, 51 Brattle St., Cambridge, Mass. 02138.

New Medico-Historical Films

Two 16mm. sound films, in color, have been produced by Dr. Thomas R. Forbes. *John Hunter—Enlightened Empiricist* (11 minutes) presents Hunter as an anatomist and surgeon and portrays the application of his knowledge of collateral circulation for the relief of popliteal aneurysm. *Vesalius, Founder of Modern Anatomy* (12 minutes) draws on the text and illustrations of the *Fabrica* to illustrate Vesalius' progress from Galenism to a new and more accurate knowledge of anatomy. The films, especially designed to interest medical and nursing students, members of the health professions, biologists, and historians, were made under a grant from the National Fund for Medical Education by Miss Susan Wheeler and Mr. William Guth, Communications Media Group, Yale University School of Medicine, New Haven, Conn. 06510. Prints at \$40.00 each may be ordered from Mr. Guth.

Ohio Historical Society

Recent accessions of the State Archives at the Ohio Historical Society include the Minutes of the State Board of Charities (1903-21); Minutes of the State Board of Health (1886-1917) and Public Health Council (1917-39). Additions to archival holdings on state institutions include Boy's Industrial School Trustee Minutes (1857-68, 1878-80); Hospital Register (1906-11, 1916-20); Ohio Lunatic Asylum Trustee Minutes (1838-68); Case Record Books (1838-68); Hospital Register (1877-1901); Ohio Institution of Feeble Minded Youth Admission Books (1863-1969); Superintendent's Correspondence (1881-1905); Questionnaire Book (1884-1902); Ohio Soldier's and Sailor's Orphans Home Hospital Register (1871-1902); Ohio Penitentiary Register of Anthropometric Descriptions (1887-1907). Inquiries concerning the State Archives and its holdings should be addressed to Patricia B. Gatherum, Reference Librarian, Ohio Historical Society, I-71 and 17th Avenue, Columbus, Ohio 43211.

Award

Miss Madeline E. Stanton first Librarian of the Historical Library, Yale Medical Library, and former Associate Editor of the *Journal of the History of Medicine and Allied Sciences*, was awarded the Smith College Medal at the College's "Rally Day" exercises on February 28. The award, which was established in 1963, is made to those who in the judgment of the Trustees of the College "exemplify in their lives and service...the true purpose of liberal arts education."

Death

The *Bulletin* has learned with regret of the death of Mrs. Dorothy Hixon Clark, widow of Dr. Logan Clendening, on January 15 in Santa Barbara, Calif. In the years since Dr. Clendening's death in 1945, Mrs. Clark has provided funds for the purchase of additional volumes and the maintenance of the collection of several thousand rare books on medical history and philosophy which Dr. Clendening bequeathed to the Library of the University of Kansas Medical Center. Mrs. Clark's continued interest in the history of medicine also led to her establishment of a Memorial Lecture and a Traveling Fellowship named for Dr. Clendening.

PROGRAMS OF MEETINGS

George W. Corner History of Medicine Society, Rochester, N.Y.

January 18, 1973: "Murder in the Medical School, Harvard, 1849," John B. Stetson.

Handerson Medical History Society, Cleveland, Ohio.

January 24, 1973 "Medical Behavior of the Old Order Amish of La Grange County, Indiana," Don Lawrence Troyer.

Johns Hopkins Medical History Club, Baltimore, Md.

January 10, 1973: "Sudden Death in Medical History," Paul Dudley White.

Mayo Foundation History of Medicine Society, Rochester, Minn.

January 10, 1973: "Dr. John McLoughlin—'White Eagle' of the Northeast," Donald W. Mulder; "Alexander Graham Bell—Inventor, Scientist and M.D.," David A. E. Shepherd.

William Snow Miller Medical History Seminar, University of Wisconsin, Madison

January 22, 1973: "Integration of Traditional and Western Medicine in the People's Republic of China," Victor W. Sidel.

February 21, 1973: Multimedia presentation, "Reflections of Pharmacy in Music and the Visual Arts," Glenn A. Sonnedecker.

NEWS FROM ABROAD

London

The Worshipful Society of Apothecaries of London announces that the Monckton Copeman Lecture entitled "The City, Medicine and China" is to be given by Dr. A. D. Leigh, FRCP, on January 31, 1973.

Switzerland

The annual meeting of the Swiss Society for the History of Medicine and Science will take place October 20-21, 1973, in Lugano, Switzerland.

BOOK REVIEWS

JEAN ALONZO CURRAN. *Founders of the Harvard School of Public Health* (with biographical notes), 1909-1946. New York: Josiah Macy, Jr. Foundation, 1970. xviii + 294 pp. Ill.

Jean Curran has written an informative and interesting history of the development of graduate education in public health in Boston. He traces the development of interest in the teaching of preventive medicine at Harvard and MIT, culminating in the establishment of the Harvard MIT School for Health Officers, and the history of its successor, the School of Public Health, through its first twenty-four years to its reorganization in 1946.

Access to official papers and to personal correspondence and diaries made the biographical notes of particular interest. The author presents significant evidence of President Eliot's interest in preventive medicine and public health throughout his tenure, exemplified in his final year by the appointment of Milton J. Rosenau as full-time Professor of Preventive Medicine and Hygiene, the first such appointment in the United States. President Lowell, Eliot's successor, was instrumental in bringing together George W. Whipple, Professor of Sanitary Engineering at Harvard, William T. Sedgwick, Professor of Biology and Public Health at MIT, and Rosenau. These three developed the concept of a jointly sponsored School for Health Officers, established in 1913 under their joint leadership and becoming, in 1922 and in an expanded form, the Harvard School of Public Health.

The first section of Curran's book deals with the administration of the School for Health Officers and of the School of Public Health through the deanship of David Edsall, 1922 to 1935, under Cecil Drinker 1935 to 1942, and the acting deanship of Edward G. Huber. Much of the history of this period concerns problems of financing the growing school, the sometimes complex relationships between the School of Public Health and the Medical School, and problems of financing mainly through the Rockefeller Foundation.

The second section deals with the growth of the major departments of the School of Public Health, a chronicle of great successes and some less than successful ventures. The biographical notes are particularly revealing and there is an amusing story of Rosenau's application to the Rockefeller Foundation for \$7,500,000, which President Lowell insisted "must be considered a personal request and while *interesting* . . . very large." Lowell's consent to the appointment of Dr. Alice Hamilton was not to "be construed as a precedent that might lead to the admitting of women for Harvard degrees," and she must not enter the Harvard Club, participate in academic procession, or expect the professorial privilege of football tickets.

Hints of problems in the relationship of the School of Public Health with the Medical School foreshadow current interests. Questions were raised whether the courses offered by faculty primarily concerned with the teaching of medical students met the needs of post-graduate students in the School of Public Health, and whether endowment funds coming from the Rockefeller Foundation and the Dela-

mar fund were being utilized in the best interest of the School. Dr. Curran is scrupulously unbiased in his consideration of these problems but recognizes these factors in addition to the faculty depletion during World War II as leading to the question of accreditation raised in 1945. Growing sentiment for independence of the School of Public Health as an autonomous division of the University became a reality in 1946 with a major grant from the Rockefeller Foundation conditional upon such independence and the acceptance of the deanship by Brigadier General James S. Simmons.

Serious and meticulous research has produced a valuable and very readable history of the School of Public Health at Harvard. I recommend it to all who are interested in post-graduate public health education.

Reviewed by ERNEST L. STEBBINS, M.D., Dean Emeritus, Johns Hopkins School of Hygiene and Public Health, Baltimore, Md.

KENNETH M. LYNCH. *Medical Schooling in South Carolina 1823-1969*. Columbia, S. C.: R. L. Bryan Co., 1970. xvi + 153 pp. Ill. \$10.00.

RUTH CHAMBERLAIN. *The School of Nursing of the Medical College of South Carolina—Its Story*. Columbia, S. C.: R. L. Bryan Co., 1970. xiv + 126 pp. Ill. \$6.95.

Dr. Lynch, appointed Professor of Pathology in 1913 and serving as Dean from 1943 to his retirement in 1960, has written this excellent short history of the Medical College of South Carolina with insight and compassion. His subject is a prototype of American medical institutions during three critical periods in the development of medical education in this country: prosperity (1824-1861), disaster (1861-1865), and survival (1865-1913).

The account begins near the end of the American Revolution, when Charleston with a population of more than 40,000 (in contrast to Columbia's 4,000) was stirring itself in the interest of medical organization. Two embryo schools came into existence: the Medical School of South Carolina and the Medical College of the State of South Carolina—incidentally, an emphatic distinction is made between the two, and herein smoldered much of the early strife. The venerable Roper Hospital held its own, finally evolving into today's sophisticated, modern medical center.

Numerous strong, resolute people helped to build this school, often on a shoestring: James Moultrie, Jr., a founder of the American Medical Association, Dr. Samuel Henry Dickson, Dr. James Ramsey, Dr. Henry Ruthledge Frost, and Dr. John E. H. Hollbrook, among others.

From 1913 to the present the evolution of medical education is briefly sketched, as are the problems of finances, politics, pedagogy, and educational philosophy. There are excellent introductory comments by Dr. William S. Middleton and Dr. Lynch himself, and numerous credits to Dr. Joseph I. Waring. This reviewer

would recommend Sigerist's *The University at the Crossroads* as companion reading.

Miss Ruth Chamberlain's thoroughly documented monograph is a record of nursing education in South Carolina, encompassing the Charleston experience from 1883 to 1969 with an introduction describing abortive efforts that date as far back as 1789.

Miss Chamberlain joined the nursing department of the Roper Hospital in 1937 as education director, becoming dean of the Nursing School of the Medical College in 1953 and serving until her retirement in 1966.

Historically oriented and a keen observer, she was eminently suited to compose this worthy companion to Dr. Lynch's volume. The Charleston scene recalls the unbelievable horror and agony of early nursing, the frustrations, conflicts, and tribulations endured; the eventual evolution of nursing education from local hospital orientation to university affiliation was a difficult and often bitter experience.

The question whether nursing education should be directed toward bedside nursing or academic professionalism is forcefully presented in this gentle and lovingly written little book whose readers might find it rewarding to go back to Florence Nightingale's *Notes on Nursing: What it is, and What it is Not*.

Reviewed by WARNER LEE WELLS, M.D., Associate Professor of Surgery, University of North Carolina, Chapel Hill, N.C.

John Pecham and the Science of Optics. Edited with an introduction, English translation, and critical notes by David C. Lindberg. The University of Wisconsin Publications in Medieval Science. Madison: The University of Wisconsin Press, 1970. xvii + 300 pp. Ill. \$15.00.

In 1279 John Pecham was consecrated Archbishop of Canterbury, having previously been a master first in the theological schools of the Franciscan order at Paris and Oxford and then at the papal court. During this teaching career he had composed several works on natural science in addition to theological commentaries and tracts, and the most important of the former, the *Perspectiva communis* (apparently written ca. 1277-79) has now been given a modern edition and English translation by David Lindberg. Unlike previous texts included among the Wisconsin Publications in Medieval Science, the *Perspectiva* is neither a highly original nor a "prescient" work, but it may well have been the most widely read of them. For three hundred years it was the standard university textbook on optics, and it is Lindberg's belief that it can be used today to introduce a modern student to the presuppositions and problems current in medieval optics.

Pecham's work, synthetic in form, opens with a theory of vision, since optics to the middle ages had to involve an observer as well as a light ray. Its initial premise is the then somewhat unorthodox intromission theory of light, which explains vision in terms of light rays proceeding from object to eye (rather than in terms of visual rays emanating from the eyes, the explanation that Plato, Aristotle, and

indeed Pecham's near contemporary Robert Grosseteste had accepted). This leads naturally into a brief account of the physiology and psychology of visual perception, in good accord with the Galenic system taught by thirteenth-century physicians. The visual pyramid of light rays from the perceived object impinges upon the one sensitive portion of the eye, the glacial humor (crystalline lens), and the resultant impression is then "certified," assimilated, in the anterior part of the brain. (That the lens has any refractive power, or that the other structures of the eye have any important functions, escaped Pecham as it did all students of optics until the Scientific Revolution.) From this basis Pecham goes on to explain vision by direct, reflected, and refracted rays in a system of geometrical optics that is essentially (though not wholly) a digest of the work of the great Islamic scientist Alhazen, giving particular attention to the geometry of image formation.

Lindberg's editorial work is admirable. He has turned up part of a revision by Pecham of the *Perspectiva communis*, and his edition of the Latin text incorporates the alterations while identifying them so clearly that the original version can be read with no difficulty. His English translation is a successful one, easy and fluent. Nevertheless, the edition is not in itself a self-sufficient introduction to medieval optics. Lindberg's spare, restrained introductory chapter summarizes the content of Pecham's treatise perfectly adequately, but it does not provide quite enough information about the intellectual context of the work, its metaphysical and scientific setting, to make it immediately accessible to someone who has not yet read in the field.

Reviewed by MICHAEL McVAUGH, PH.D., Associate Professor of History, University of North Carolina, Chapel Hill, N.C.

BETSY C. CORNER and CHRISTOPHER C. BOOTH (Editors). *Chain of Friendship: Selected Letters of Dr. John Fothergill, 1735-1780*. Cambridge, Mass.: The Belknap Press of Harvard University Press, 1971. xxiv + 538 pp. \$20.00.

From the 400 extant letters of John Fothergill, the eminent eighteenth-century London doctor and Quaker, the editors have selected about 200 for publication. These begin in 1735 when as a young Yorkshireman of 23 Fothergill had just finished the first year of his medical studies at Edinburgh, and they end in 1780 in the last year of Fothergill's life with his prescribing for the health of his American friend, Benjamin Franklin, and venturing to propose a scheme to him on how to end war. Given Fothergill's wide interests, it has been a wise decision to have as his editors both a doctor, Professor Booth, and an historian, Mrs. Corner. They have done their work well. Their footnotes are generous, learned, and accurate. The only slip noticed by this reviewer is one that makes Dr. Thomas Percival a founder of the Manchester Library and Philosophical Society (p. 352)—which of course should have been the Manchester Literary and Philosophical Society.

The editors intended their selection of letters to make a sort of autobiography.

Unfortunately the medical side of Fothergill's life—his professional practice and patients—apparently finds little mention in the original correspondence, so that on this subject the selection is inevitably disappointing. But what it does provide superbly is an understanding of Fothergill's personality and mind. Two characteristics are likely to strike the reader. In the first place, although dedicated to his profession and working long hours at it, he showed little trace of that professionally obsessed philistinism which is so common in the second half of the twentieth century. Through his Quaker connections in Pennsylvania, he was deeply informed about the relations between England and the Thirteen Colonies, and made strenuous if vain efforts to avoid imperial breakdown. He was also a passionate botanist and horticulturist. His gardens at Upton in Essex were rivalled only by the royal gardens of Kew. "I call myself," he once wrote, "a sensual botanist. . . . I love the vegetable creation, I love its varieties and cultivate it as an amusement. Every new plant is an addition to my pleasure" (pp. 318-319, 408).

In the second place, there was an attractive (no doubt Quaker) mixture of compassion and shrewdness in Fothergill. He once happened to dwell on the nature of historical writing, observing that historians would do well to write on such life-enhancing subjects as agriculture, commerce and the arts. Instead they wrote another sort of history, especially deplorable because it was foisted on children. "We are introduced at school and in the course of our education, into war, battles, sieges, carnage, and no character is thought equal to that of a hero, a licensed, wholesale *murderer*; we are taught to be in love with Virgil's heroes, Homer's, and in sober prose with the lives of men who made themselves illustrious by slaughter. Multitudes never emancipate themselves from these prepossessions, and it is difficult even for the few who do. How much happier it is for those who have none of these learned prejudices to eradicate, but like a *tabula rasa* are open to the impressions of every useful bias that humanity and philanthropy exult in" (p. 266).

Although this collection of letters does not radically change what we already knew about Fothergill's career and achievements, it allows us to savour a private world at once austere, humane, learned and public-minded—a private world of a sort that has become all too rare. The Quaker doctor's letters are therefore welcome.

Reviewed by DAVID SPRING, PH.D., Professor of History, The Johns Hopkins University, Baltimore, Md.

ANNE L. AUSTIN. *The Woolsey Sisters of New York. A Family's Involvement in the Civil War and a New Profession (1860-1900)*. Philadelphia: American Philosophical Society, 1971. xv + 189 pp. Ill. \$3.00 (paperbound).

To this vignette, lacking only the word "nursing" to make the title fully descriptive, Anne Austin, former Professor of Nursing at Western Reserve University, brings the historical perspective and enthusiasm evident in her *History of Nursing Source Book* (1957) and *A History of Nursing from Ancient to*

Modern Times (1962). Against backgrounds shifting rapidly from a Charleston slave auction in 1859 through the Civil War and the New York draft riots, four daughters of the abolitionist Woolsey family move into a variety of active war roles which served to mold their later contributions to the evolution of professional nursing in America.

Georgeanna (1833-1906) and Eliza (1835-1917) entered hospital work early in the war. After a brief training course under Dr. Elizabeth Blackwell, they served first in the Washington area as informal agents for the Woman's Central Association for Relief of New York (later part of the Sanitary Commission), and, in 1862, at Frederick Law Olmsted's request, helped to equip and then served aboard the hospital transports of the Peninsular Campaign. Jane (1830-1891) and Abby (1828-1893) made the family home at 8 Brevoort Place in New York City a headquarters for preparing and collecting hospital supplies. Jane worked also in the hospitals of New York and, for the last two years of the war, at Fairfax Theological Seminary Hospital near Alexandria, Virginia. Directing girls' industries from 1869 to 1872 at the Hampton Normal and Agricultural Institute for freedmen further prepared her for the complex organizational challenges facing her in 1872, as resident directress of the new Presbyterian Hospital in New York City.

Abby, who had worked with Jane at Presbyterian Hospital, was instrumental, through her membership in the State Charities Aid Association, in founding Bellvue Hospital Training School for Nurses in 1873, the same year that Georgeanna, together with her husband, Dr. Francis Bacon of the Yale Medical School, helped to found the Connecticut Training School for Nurses in the New Haven Hospital. Both new schools were American archetypes of the Nightingale plan; together with the nursing school established at Massachusetts General Hospital, also in 1873, they have been called "the first American nursing schools, in the modern sense . . ." (Shryock, *The History of Nursing*, 1959, p. 295).

All four sisters were keen observers who also wrote well. George Worthington Adams (*Doctors in Blue*, 1952, p. 235) considered Jane's *Hospital Days* (New York, 1870) "probably the best book about the Civil War by a woman writer," yet the centennial deluge has risen and receded without a new printing of this volume, "little known and hard to find," or of Georgeanna and Eliza's *Letters of a Family During the War for Union 1861-1865* (privately printed, New York, 1899). Professor Austin's readers will therefore welcome her rich sampling of the Woolseys' recorded experiences, perhaps wishing she had included even more.

When a family study is so unusually well supplied with a comprehensive bibliography, an index, photographs, and a concise genealogical table, little room remains for scholarly cavil: yet Joseph Janvier Woodward, pioneer photomicrographer and compiler of the medical volumes of the elephantine *Medical and Surgical History of the War of the Rebellion*, deserves to have his middle name correctly spelled (the 'n' is omitted at every mention). Readers interested in Civil War medicine as well as those concerned with the development of the nursing profession in America will enjoy this study of four intelligent, courageous and perceptive women who made significant contributions in both fields.

Reviewed by PATRICIA SPAIN WARD, M.A., Johns Hopkins Institute of the History of Medicine, Baltimore, Md.

ANN BECK. *A History of the British Medical Administration of East Africa, 1900-1950*. Cambridge: Harvard University Press, 1970 (A Commonwealth Fund Book). xiv + 271 pp. \$8.00.

Professor Beck's scholarly and pioneering book is a welcome addition to the literature on British East Africa as well as on social medicine and public health. It fills a void since no history has been available and the widely scattered sources have rarely been researched. The author views her subject from the perspective of government officials. Moreover, the field of medicine is assessed as but one aspect of overall colonial policy.

Following two introductory chapters, this monograph concentrates primarily on the WWI to WWII era. The final three chapters review the WWII period and postwar planning, medical research from 1900 to 1950, and present an historical summation. During the intra-war period, the foundations of the present health care system were established. Earlier, small-scale medical services had served primarily European government employees and to some extent Indians needed for building the Uganda railroad and trade. Except during epidemics, the medical departments assumed Africans to be immune to recurrent tropical diseases—plague, malaria, and sleeping sickness—the focus of attention. The medical care of Africans was left to Christian missions.

In the 1920s governments assumed responsibility for the welfare of the entire population, establishing networks of dispensaries in Kenya, Uganda, and Tanganyika. To staff these outposts the technical training of qualified African personnel was initiated.

In time, controversies developed over the roles of Christian missions in the new health care systems. Also, progress was slowed down by conflict between the requirements of Western medicine and the British policy of upholding native customs. Moreover, improvements in health standards required government involvement in fields such as elementary education and economic advancement. The over-riding factor, however, was a chronic scarcity of funds and the resulting shortages of manpower and materials. Thus the modest expansion in the 1920s was followed by actual retrenchment during the 1930s. Only after WWII was a major expansion of medical services financed by Britain.

The book includes a brief glossary, an extensive bibliography, bibliographic notes, and an index of subjects, persons, and places. A ten-page appendix presents data on expenditures, personnel, and population but the material is incomplete and presented without interpretation. Illustrations and a detailed map for the reader's guidance would have been useful.

Although the author intentionally omits a detailed description of actual medical services, her decision results in a loss to the reader. Nonetheless, Dr. Beck has written a book of both interest and value.

Reviewed by LEONORE M. LAAN, PH.D., Past Research Specialist for Africa in the Office of the Secretary, U.S. Department of Health, Education and Welfare, Washington, D.C.

JOSEPH C. AUB and RUTH K. HAPGOOD. *Pioneer in Modern Medicine: David Linn Edsall of Harvard*. Foreword by Paul Dudley White. N. p.: Harvard Medical Alumni Association, 1970. xi + 384 pp. Ill. \$12.00. [Dist. by Harvard University Press].

As so well stated by Paul Dudley White in his Foreword,

Edsall was a great leader, perhaps the most important one, to put theory into practice. . . . This book presents in considerable detail not only the background and life of David Edsall but the history of the struggles of the faculties of the medical schools of three universities: Pennsylvania in Philadelphia, Washington in St. Louis, and Harvard in Boston, . . . Dr. Aub and Mrs. Hapgood have done an important service in presenting the complexities of the life of our own hero David Edsall and we are grateful.

Dr. Aub's Boswellian approach to recording those creative years is inevitably autobiographical, for he and Edsall were close friends. Edsall was indeed a giant figure, in intellectual and physical stature and in moral forcefulness. He dominated the areas in which he served, in an era so aptly characterized by Simon and James Flexner as the "heroic age of American medicine."

Although as a youthful medical graduate, Edsall had the advantage of a year's study in London, Vienna, and Graz and considered it "perhaps the most important single thing, for my development, that I ever did," subsequent American formative influences made him a distinctively home-bred, indigenous phenomenon.

His first opportunity came under the inspiring guidance of Dr. William Pepper, in his research laboratory at the University of Pennsylvania. Through membership in the Interurban Clinical Club he came into intimate contact with the exciting new developments at Johns Hopkins, as well as those in Boston and New York. In Pittsburgh began a life-long interest in diseases of occupation, and in Philadelphia as a district physician he acquired a keen and sympathetic understanding of the relationship of poverty to illness.

The great turning point in his career came when he had apparently reached the summit of academic attainment, as Professor of Clinical Medicine at 'Penn' and then, briefly, as Professor of Preventive Medicine at Washington University. Attempts to introduce his deeply felt convictions concerning ideal medical departmental organization and program resulted in such opposition and frustration that he was forced to resign in despair. Yet his sterling qualities were widely recognized, and the Jackson professorship of clinical medicine opened up for him at Harvard in 1912. The deanship of Harvard Medical School (1918), combined with the deanship of the School of Public Health in 1922, provided him with the opportunity to fulfill his dream of coordinating curative and preventive medicine.

As the first of a succession of great full-time deans, Dr. Edsall received enthusiastic support not only from President Lowell, but from the almost legendary Charles W. Eliot, who had begun his transformation of Harvard Medical School when he became President in 1869 (just a month before Edsall was born!).

Edsall was responsible for the introduction of the Harvard version of "geographic full-time" to amplify and balance complete full-time professorships, in a variety

of affiliated teaching hospitals. That brought him into conflict with the redoubtable Abraham Flexner with his doctrinaire insistence on a complete full-time faculty in control of one university hospital. None-the-less, the virtues of the Harvard system won support in the competition for Rockefeller Foundation grants and, eventually, membership on its Board for Edsall. He was ever on the alert to encourage and provide opportunities for promising young basic scientists and clinicians, producing an outstanding faculty as a legacy to his successors when he retired in 1935. In view of the modern concept that all people are entitled to good medical care as a right, Edsall's vision of the community-wide responsibility of medical schools makes him a true prophet of the future!

Reviewed by JEAN A. CURRAN, M.D., Professor Emeritus of the History of Medicine, State University of New York, Brooklyn, N.Y

THE BULLETIN RECENTLY RECEIVED *

- Johanna Bleker. *Die Geschichte der Nierenkrankheiten*. Mannheim: Boehringer Mannheim GmbH, 1972. 145 pp. Ill.
- Marc Bloch. *The Royal Touch: Sacred Monarchy and Scrofula in England and France*. Translated by J. E. Anderson. London: Routledge & Kegan Paul; Montreal: McGill-Queen's University Press, 1973. xi + 441 pp. Ill. \$17.95.
- George W. Corner. *Doctor Kane of the Arctic Seas*. Philadelphia: Temple University Press, 1972. xiii + 306 pp. Ill. \$10.00.
- James E. Cronin (Editor). *The Diary of Elihu Hubbard Smith (1771-1798)*. Philadelphia: American Philosophical Society, 1973 (American Philosophical Society, Memoirs, 95). xiii + 481 pp. Ill. \$15.00.
- E. S. Gurdjian. *Head Injury from Antiquity to the Present with Special Reference to Penetrating Head Wounds*. Springfield, Ill.: Charles C Thomas, 1973 (The Beaumont Lecture). vii + 139 pp. Ill. \$11.75.
- James E. Harris and Kent R. Weeks. *X-raying the Pharaohs*. New York: Charles Scribner's Sons, 1973. 195 pp. Ill. \$10.00.
- Institute of History of Medicine, Hyderabad. *Museum Guide*. Part II (Indian Medicine). Notes by V. V. Ramana Rao; edited by D. V. Subba Reddy. New Delhi: Central Council for Research in Indian Medicine and Homeopathy, 1971. xvii + 82 pp. Ill. Rs. 8/-
- G. A. Lindeboom. *Geschiedenis van de Medische Wetenschap*. Bussum: Fibula-Van Dishoeck, 1972 (Grote Fibula Serie 2). 198 pp. Ill. F. 27.50.
- Dorothy Long (Editor). *Medicine in North Carolina: Essays in the History of Medical Science and Medical Service, 1524-1960*. Raleigh, N.C.: North Carolina Medical Society, 1972. 2 vols. Ill. \$25.00.
- John Pecham. *Tractatus de perspectiva*. Edited with an introduction and notes by David C. Lindberg. St. Bonaventura, N.Y.: The Franciscan Institute, 1972 (Franciscan Institute Publications, Text Ser. 16). 110 pp. Ill.
- Florencio L. Pérez Bautista. *El tema de la enfermedad en la novela realista Española*. Salamanca, 1972 (Cuadernos de Historia de la Medicina Española Monografías XXII). 259 pp.
- B. Rama Rao. *A Check-List of Sanskrit Medical Manuscripts in India*. New Delhi: Central Council for Research in Indian Medicine and Homeopathy, 1972. vi + 101 pp. Rs. 10/-
- Willard H. Wright. *40 Years of Tropical Medicine Research: a History of the Gorgas Memorial Institute of Tropical and Preventive Medicine, Inc., and the Gorgas Memorial Laboratory*. Washington, 1970. xii + 426 pp. Ill.

*The *Bulletin* reserves freedom of decision as to the publications to be listed in this section. Items received, other than those assigned for review, are ultimately incorporated into the collection of the Institute of the History of Medicine.

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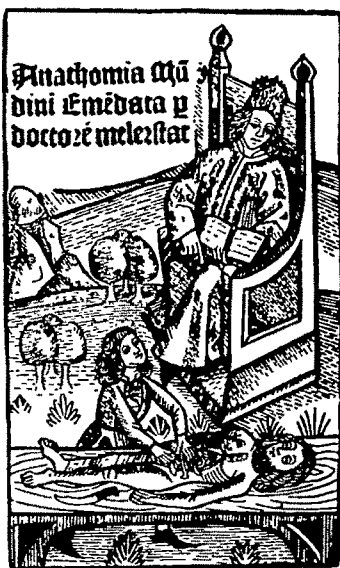
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Editorial Note

The Johns Hopkins Press and the editors of the *Bulletin of the History of Medicine* wish to announce a change in both printer and process. Using the offset method and certain more recent innovations, Port City Press will hereafter print the *Bulletin*. For forty years, since the *Bulletin* started publication, this has been the task of the J. H. Furst Company of Baltimore, the editors dealing initially with the late Mr. Frederick Furst and more recently with his son, Mr. Victor Furst. The relationship has been a pleasant one and we see the approach of change with no little sadness. "The world's a scene of changes," not least, of course, in technology. In the last third of the twentieth century not only are new processes introduced but old processes are increasingly modified. We hope to benefit from such advance.

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ERASMUS' MEDICAL MILIEU *

PETER KRIVATSY

At the height of his fame, between the ages of forty and fifty, he was called "light of the world," "doctor universalis," "vir incomparabilis et doctorum phoenix." The humanist Mutian called him "suprahuman" and another humanist, Camerarius, wrote that "everyone . . . glorified him, sings his praises." But no one is praised forever nor by everyone. Only a few years later, Étienne Dolet,¹ another humanist, addressed him as "buffoon," "toad," "silicernium," "toothless old food-for-worms." Julius Caesar Scaliger² attacked him as "canicula," "carnifex," "furia," "sceletus," "insaniens," "barbarus." And his direst enemy, Martin Luther,³ declared him "empty," "destructive," "tyrannus" and predicted, "He who crushes Erasmus cracks a bug, which stinks even worse when dead than alive."

Erasmus Desiderius of Rotterdam,⁴ who was both lauded and hated by

*This is an expanded version of a paper presented at the forty-third annual meeting of the American Association for the History of Medicine, Birmingham, Alabama, April 2, 1970.

¹ Étienne Dolet, *Dialogus, de imitatione Ciceroniana, adversus . . . Erasmus Roterodamum* (Lugduni, apud Seb. Gryphum, 1535), p. 3-7.

² Julius Caesar Scaliger, "Oratio I," and letters to Arnoldus Ferronus in his *Adversus Desid. Erasmus orationes duae . . . una cum ejusdem epistolis* (Tolosae Tectosagum, apud Dominicum Bosc, & Petrum Bosc, 1621). "Oratio I" was first published in 1531; and "Oratio II" was printed in 1536 and dated 1537. See also n. 182 below.

³ Letter to Nicolaus von Amsdorff (1483-1565) written ca. 11 March 1534, in *Dr. Martin Luther's Briefwechsel*; bearbeitet von Ernst Ludwig Enders, fortgesetzt von G. Kaweran (Frankfurt am Main, 1884-1915).

⁴ There are many general biographies of Erasmus. This author read the following works: E. Emerton, *Desiderius Erasmus of Rotterdam* (New York and London: G. P. Putnam's Sons, 1899); G. Faludy, *Erasmus of Rotterdam*. (London: Eyre & Spottiswoode [1970]); L. Gautier Vignal, *Érasme 1466-1536* (Paris: Payot, 1936); J. Huizinga, *Erasmus of Rotterdam* (London: Phaidon Press [1952]); J. Jortin, *The life of Erasmus*. 3 vols. (London: John White, 1808); J. J. Mangan, *Life, Character & Influence of Desiderius Erasmus*, 2 vols. (New York: Macmillan, 1927); J. J. Margolin, *Érasme par lui-même* (Paris: Du Seuil, 1965?); K. A. Meissinger, *Erasmus von Rotterdam* (Berlin: A. Nauck, 1948); R. Newald, *Erasmus Roterodamus* (Freiburg in Breisgau: Erwin Burda, 1947); F. M. Nichols, *The Epistles of Erasmus*, 3 vols. (London, New York, etc.: Longmans, Green and Co., 1901-18); Preserved Smith, *Erasmus* (New York: Harper [c. 1923]); S. Zweig, *Triumph und Tragik des Erasmus von Rotterdam* ([Frankfurt am Main] S. Fisher, 1958). I have seen two books on the subject of this paper: E. D. Baumann, *Medischhistorische studiën over Des. Erasmus* (Arnhem: Van der Wiel



his fellow humanists, was probably the greatest of them all. Erasmus was born either at Rotterdam or Gouda at the end of the 1460s.⁵ His mother, the daughter of a physician, died very soon thereafter of the plague, as did his father (who was a priest) some years later. Although Erasmus entered the Augustinian monastery at Steyn and was ordained a priest in 1492, he found the restrictions and narrow-mindedness of the cloister intolerable. Once he had received a dispensation from residence in the monastery, Erasmus left, never to return. Later he also received dispensations from wearing his priestly robe, and in consideration of his poor health, from observing fasts.

Thus he was free to study and to travel wherever he chose. Although he did not realize it, he had begun his great campaign against hate and folly by exerting his penetrating influence on contemporary philosophy, theology, and scientific thought. Very conscious of being European, he was one of the first to work for the unity of Europe, for peace in Europe. He loved the intellectual heritage of Europe: philosophy, literature, poetry; he loved books, the bearers of culture, and Latin, the elegant bearer of the unity of thought.

The first decisive step in his intellectual development occurred in 1494 when he was invited by Henry of Bergen, the bishop of Cambrai, to enter his service. With the bishop's help, Erasmus arrived in Paris in 1495 to study theology. Here he met a young Englishman named William Blount who invited Erasmus to visit England in 1499. During this first visit and during a subsequent visit in 1505, Erasmus met Thomas More; John Colet; William Warham, the archbishop of Canterbury, and John Fisher, the bishop of Rochester. Through them, Erasmus came in contact with the heritage of the Italian Renaissance. Since the donations of his patrons were supplemented by an income from teaching and writing, Erasmus was able to devote himself more and more to the study and rediscovery of the ancient classics and the Christian tradition.

The study of the ancient classics and the influence of the growing number of his humanist friends led him to apply the same methods of exegesis to the Christian texts which the Italian humanists applied to the classics. Thus he became a part of the movement which was breaking down the medieval traditions of scholasticism and was in revolt against

[1953?]); M. Hermanns, *Erasmus von Rotterdam und seine ärztlichen Freunde*. Inaug. Diss. Düsseldorf (Würzburg: Richard Mayr, 1937).

⁵ The year of Erasmus' birth is uncertain. The most up-to-date information on this is presented by Koch, who suggests that Erasmus was born in 1467. A.C.F. Koch, *The Year of Erasmus' Birth* (Utrecht: Heantjens, Dekker & Gumbert [1970]), p. 44

intellectual and ecclesiastic authority. Erasmus, however, went further in this direction than many of his humanist friends. Like Thomas More and especially Vives, he turned his humanistic ideas toward the social and cultural issues of the day. The importance of man as an individual was growing rapidly and, whether Erasmus translated the letters of Jerome or the treatises of Galen, he did it for the newly born man whom he perceived to be a member of an active and responsible part of the society, an altogether new aristocracy: the educated class.

Erasmus' circle included many of the famous humanists of his time, who were interested in studying man, the character of man, and man in the state of action. Among his friends were statesmen, church fathers, linguists, artists, printers, philosophers, and physicians. In Venice he had made many friends in Aldus' circle; in Rome the cardinals were delighted to honor him; in Basel he became the center of Froben's circle. Erasmus was also a close friend of Dürer, Holbein, Reuchlin, Vives. In each country where he traveled, he secured the friendship of the leading physicians of the time: in England, John Francis and Thomas Linacre; in France, William Cop; in Basel, the Hungarian Joannes Antoninus.

The breadth of Erasmus' interest in his environment is amply reflected through the subjects which he chose to write about. Allen⁶ lists more than 70 principal works in the fields of literature, education, divinity, morality, religion, and politics. In the field of medical interest Erasmus' most important works are the *Epistolae*, the *Adagia*, the *Colloquia*, and the Galen translations. The work by which Erasmus is best known, the *Praise of Folly*, was written in Thomas More's house. Erasmus returned to England from Italy in 1509, having been invited to stay with More and his young wife at their house in London. During the long journey, Erasmus amused himself with the idea of writing this book. When he arrived at London, his kidney stone pains confined him to his study for a week. Unable to concentrate on scholarly work, he began to entertain himself by writing this little satire which became his most famous work. He named it in honor of More, with the play of words, *Moriae encomium*. It was also called *Laus stultitiae*, and *In Praise of Folly*. There are scholars who judge Erasmus antimedical because of this facetious little

⁶ The basic sources of this study are the *Opus epistolarum Des. Erasmi Roterodami* collected and edited by P. S. Allen, H. M. Allen, H. W. Garrod, and B. Flower and published by the Clarendon Press at Oxford in 12 volumes, 1906-1958 (referred to hereafter as *Epistola*, followed by the number of the individual letter); and the 1540 Basel edition of Erasmus' *Opera omnia* published in 9 volumes by Froben (quoted as *Opera*).

book. Medicine, however, was merely a side issue compared with his political and social targets. Despite its carnival mask, this work became one of the most effective pamphlets in opening the road to the Reformation. The *Folly* also won a mention for Erasmus in histories of medical psychology and psychiatry. According to Leibbrand,⁷ the old example of the Platonic mania was used by Erasmus, who distinguished it from the purely sensory disturbance of delirium.

Their continuous interest in man and man in a state of action forced most of the humanists to write letters in an effort to obtain information and to give an account of their own lives. In the days when newspapers and even scientific periodicals were unknown, the tireless hand of the humanist supplied the news. Erasmus was an ardent letter writer. When he arose in the morning—usually very early, because he could not sleep, so he said, more than three or four hours a day—he read and wrote letters. This was his routine for decades. Allen's *Erasmi epistolae* lists 3,140 letters written by Erasmus or written to him between 1484 and 1536. But he wrote many more: some days he sent out up to forty letters. His letters provide a comprehensive source of intellectual history of his age.

While in his letters he informs us about his health and his physicians, the *Adagia* and the *Colloquia* present a broader view of medicine, hygiene, and public health. His *Adagia*, a collection of classical proverbs with an explanation of their meaning, was published first in 1500 and again nine more times during his lifetime. The *Adagia*, rapidly established as an often used and quoted standard work, influenced Montaigne the man of letters as well as Montaigne the man of science. Bacon⁸ was familiar with it and referred to it; Konrad Gesner⁹ cultivated it in his *Historiae animalium*; and the pedant in Giordano Bruno's¹⁰ *Candelaio* quotes strings of Erasmanian adages. The *Colloquia*¹¹ also had a substantial influence.

⁷ W. Leibbrand and A. Wettley, *Der Wahnsinn. Geschichte der abendändischen Psychopathologie* (Freiburg; Karl Alber [1961]), pp. 182-183.

⁸ "Adagio receptum erat, Botrum contra botrum citus maturescere" in Francis Bacon, *De augmentis scientiarum lib. IX* (Amstelaedami, sumpt. Joannis Ravesteinii. 1662), p. 304; "Aquila pro longaeva habetur..." in his *Historia vitae et mortis* (Lugduni Batavorum, ex off. Joannis Maire, 1636), p. 82.

⁹ H. Morley, "Konrad Gesner," in *Clement Marot and other studies* (London: Chapman and Hall, 1871).

¹⁰ A. Yates, *Giordano Bruno and the Hermetic Tradition* (Chicago: University Press [c. 1964]), p. 252.

¹¹ There is an unpublished doctoral dissertation on the subject: Heinrich Hegel. "Die Medizin in den Colloquien des Erasmus," München, 1950.

First published in 1519, it contained brief dialogues in which Erasmus created a gallery of characters. The several revised and expanded editions of this work include critical and satirical attacks on various beliefs, popular superstitions, and institutions. François Rabelais became an enthusiastic student of Erasmus's works and Thuasne¹² proved that the *Gargantua* and *Pentagruel* do in fact borrow a great deal from the *Colloquia* and also from other works of Erasmus.

As a humanist, Erasmus deemed it important to provide newer, better, more modern translations of the writings of the ancient Greeks and the Church Fathers. Humanists expected that the recovery of the original, pure Greek texts would provide the means for solving scientific and medical problems also, and only codification would be necessary. Erasmus retranslated the New Testament from the Greek into Latin, because he suspected the Vulgate's accuracy. He read the works of Hippocrates and Galen, possibly to obtain answers for the healing of his own body. While he retranslated some of the general essays in Galen's works, he did not retranslate any really significant medical text. His selection of the Galenic texts appears to have been rather haphazard. Erasmus, who preferred the mentality of Hippocrates to that of Galen, translated three treatises from the first volume of the 1525 Venice edition of Galen's complete works. The three treatises, dedicated to his Hungarian friend, Joannes Antoninus, who had treated him in Basel in 1524, are: *Ad bonas artes exhortatio*, *De optimo docendi genere*, and *Quod optimus medicus idem sit & philosophus*.¹³ While working on the translation, Erasmus found the Greek text to be disappointingly inaccurate.¹⁴ It is important to note that the dedication addressed to Antoninus encourages young people to choose the medical profession.¹⁵

Erasmus never acquired a medical degree, but earned a place in the history of medicine through his influence on his medical friends, his

¹² L. Thuasne, *Études sur Rabelais* (Paris: É. Buillon, 1904), pp. [27]-157. Ch. ii. "Rabelais et Érasme."

¹³ *Opera*, vol. 1, pp. 871-884. An excellent essay on the subject is that by L. Elaut: "Érasme traducteur de Galien." *Bibliothèque d'Humanisme et Renaissance*, 1958 20 (1): 36-44. The complete Galen was sent to Erasmus by Franciscus Asulanus the publisher in 1526. The price was then 30 golden florins, unbound, in Basel. Cf. *Epistolae* 1746, and 2780, lines 8-11. For comparison: a physician earned during the Renaissance an average of 16 golden florins a year, a baker, 12, a schoolmaster 3.5. Cf. J. H. Donhoff, *Der Arzt und sein Honorar im Wandel der Zeit* ([Zürich] Sanssouci [1968]).

¹⁴ *Epistolae*, 1707, line 3, and 1713, line 30.

¹⁵ *Opera*, vol. 1, p. 871, lines 13-15.

command of the works of Hippocrates and Galen, and his advanced views of hygiene. Erasmus' knowledge of medicine was a function of his cultural breadth, not of his professional specialization. His interest in medicine might have originated in the humanist's thirst for knowledge, but I believe that the state of his own body was the decisive factor. Throughout his life, which lasted almost 70 years, he was afflicted with bad health. Moreover, he was a hypochondriac, in constant fear of all the old and new illnesses of his time.

Erasmus' feelings about the medical profession were based on his own experience with physicians, on his readings of the great medical classics, and on the old mystical religious emotions by which man clings to the supernatural in times of hopelessness and danger. His outbursts against the medical profession as such, which reached their highest point in the *Folly*, were toned down, and instead of generalizing, he criticized only individuals, such as the uneducated village surgeons, not the learned Latin-speaking physicians with university degrees.

Erasmus' views on medicine were very similar to those of François Rabelais (1495-1553). Rabelais was a physician and Galenist who lectured on Hippocrates at Montpellier and Lyons. Erasmus became interested in Rabelais' humanistic thinking, so emphatically expressed in his *Gargantua* and *Pantagruel*, which were first published just a few years before Erasmus' death. The image the two humanists had of the physician is very complex. The figure is a composite of Hippocrates' noble physician and that seen through the fool's eyes. Their physician participates in the patient's life-and-death struggle; he places his hand on the patient's pulse and often checks his urine. But the patient watches the doctor's face and asks with irritation if the good man is uncertain: "Doesn't my urine tell, will I die or get well?"¹⁶

Erasmus' *De laude medicinae* is one of the most articulate expressions of his views of the medical art. He gives almost full credit to the physician's power of healing. The essay is a comprehensive summary of his beliefs about the medical profession, which were formulated as a direct result of his familiarity with the ideas and teachings of Hippocrates and Galen. But in the spirit of the Christian tradition, he praises the profession and the medical man not only as savior of the body of man, but as the

¹⁶ "Et mon urine vous dit-elle que je meure?" François Rabelais, *Les oeuvres* (Lyon: Jean Martin, 1558 [i.e. Rouen, after 1620?]), p. 210.

savior of the whole man, thereby acknowledging the physician's influence on man's soul also.¹⁷

"What the priest is to our souls, this the physician is to our bodies," wrote Erasmus in 1526 to John Francis¹⁸—and Erasmus had in mind not only Francis but, first of all, Hippocrates. Erasmus knew and praised the Hippocratic oath, and he had read a great deal of the Corpus. He was in constant contact with the important translators of Hippocrates and Galen, men such as William Cop, Janus Cornarius, and Thomas Linacre, and he quoted Hippocrates and Galen in many of his letters, colloquies, and adages. In the 1515 edition of the *Adagia*, he listed Hippocrates and Galen under the heading of Philosophy. Galen is quoted as a source 35 times in the *Adagia*.¹⁹ Erasmus gave his sources carefully, always making it clear whether he was quoting from an original or secondary work.

Erasmus consulted not only physicians in time of great illness, but went higher. In 1497 he had an attack of quartan fever. At his bedside he had William Cop, whom he respected highly, but according to a poem written by Erasmus many years later, he also made a vow to Saint Genevieve concerning his recovery. The fruit of this vow was the poem titled "Erasmi Roterodami divae Genovesae praesidio a quartana febre liberati carmen votivum."²⁰ This charming poem poses an interesting question: was Erasmus sincere when he wrote this eulogy to the saint and her miraculous power? Reedijk²¹ raises this issue and proposes that when considering the question, one should be able to appreciate the general tone of the poem: its gentle and playful elegance, which reveals a liberal if essentially pious mind deferring to a venerable tradition, rather than an ardent believer's strong convictions. However, in his letter to Batt²²—this time in cool prose—Erasmus repeats his belief that Saint Genevieve's intercession caused the restoration of his health.

Erasmus was a son of the Renaissance and his character was formed by a variety of influences. Margolin²³ characterizes him as "le soldat du

¹⁷ "Declamatio de laude medicinae." In Paulus Aegineta, *Salubria de tuenda valetudine* (Norembergae, 1525), l. [69].

¹⁸ Epistola, 1759.

¹⁹ Margaret Mann Phillips, *The "Adages" of Erasmus* (Cambridge: at the University Press, 1964), pp. 397-398.

²⁰ *Opera*, vol. 5, pp. 1118-1120.

²¹ C. Reedijk, *The poems of Erasmus* (Leiden: E. J. Brill, 1956), p. 350.

²² Epistola, 124, lines 13-16.

²³ Margolin, *op. cit.* (n. 4 above).

Christ," "l'ami du peuple," "le militant de la paix." Erasmus united in himself the humble faith of the man of the Middle Ages, the Renaissance man's happiness in the rediscovery of his fellow man, and the desire for peace characteristic of the man of the age of aquarius. He was a modern man where hygiene, the environment, and public health were concerned. Four and a half centuries ago, Erasmus had firm 20th-century ideas of hygiene. In his *Colloquia*,²⁴ he warned his contemporaries about the danger of airborne infection in stuffy, crowded inns, in the breath of confessants, in baptismal water. He advocated that bed linens be changed often, that common drinking cups not to be used, and that friends not greet each other with kisses. Erasmus had a passionate desire for cleanliness of his person and in his surroundings. He violently disliked poor ventilation and bad odors. He was just as much afraid of overheated rooms as of fog, wind, and cold. He called the cold the "Scholars illness."

The *Diversoria*²⁵ also bears the typical characteristics of Erasmus' extreme aversion to physical upset. In this work he crusaded against overcrowded inns, the spreaders of the French pox. He even suggested halting pilgrimages, which he perceived to be spreaders of infection. An Epicurean by nature, he ate only food prepared according to his taste. He drank only Burgundy wines²⁶ which he considered to be a medicine; German wines were too sour for him. He could not stand the smell of fish. He moved immediately when he heard of an epidemic in a neighboring town—which is a partial explanation for his constant travels throughout Europe.

The friendship between Erasmus and More is particularly interesting from the medical point of view. We may imagine that Erasmus whenever he arrived at More's home gave an account of the Continent's current health status. Erasmus, who traveled all over Western Europe, had the opportunity to compare the Continent with England. He also wrote many letters to his English friends, criticizing the filth he saw everywhere. In 1524 Erasmus wrote to John Francis,²⁷ physician of the Cardinal of York, that the floors of houses in England were filthy with bones and vomit, with human and animal excrement. In England, he added, the larger houses were the filthiest, infested with vermin and rats, although the

²⁴ *Opera*, vol. 1, pp. 604-606; etc.

²⁵ *Opera*, vol. 1, pp. 603-606.

²⁶ *Epistola*, 1759.

²⁷ *Epistola*, 1532, lines 9-16.

overall situation in Germany was actually worse. Erasmus suggested that houses and public buildings be cleaned regularly and that windows be opened for fresh air, especially when the wind was blowing. He cited Galen's *De sanitate tuenda*,²⁸ which he knew from Linacre's translation.²⁹ Erasmus' criticism did not spare his alma mater, the College of Montaigu, which he had left in 1495. He wrote in his *Ichthyophagia*,³⁰ or *Fishdiet*, that because of bad sanitary conditions and inadequate food, many inmates got leprosy or became blind and that some had died of illnesses contracted in the college.

In the course of his friendship with Erasmus and quite possibly because of his influence, More became interested in public health. In 1514 More was appointed one of the new Commissioners for Sewers.³¹ He was also responsible for what today we would call the Antipollution Act of 1532. In his great work *Utopia*, More dreamed about clean, well-built cities with public water supply and drainage systems.³²

In addition to describing the "polluted" world around him, Erasmus wrote freely in his letters of his own illnesses and his urine. He checked his urine daily and then reported by letter to his physician on its state or color. He used the most unusual opportunities to report his medical experiences. When he was an editor for Froben, Erasmus himself wrote the prefaces and dedications for works he had edited. Some of these prefaces are important for medical history. One of the most interesting is Erasmus' preface for Chrysostomus' *De sacerdotio*, which describes and compares the effects on the human body of podagra and of calculus.³³

Excellent in discussing day-to-day life, Erasmus introduced matters of hygiene and health into literature. Before him, this subject was not part of the *bona litera*; it was the subject of medical treatises only. For

²⁸ Epistola, 1532.

²⁹ Epistola, 502.

³⁰ *Opera*, vol. 1, pp. 668-669.

³¹ W. S. C. Copeman, *Doctors and Diseases in Tudor Times* (London: Dawson, 1960), p. 166.

³² *De optimo reip. statu, deque nova insula Utopia, libellus vere aureus* [Basileae, apud Joannem Frobenium, 1518], pp. 74-77: "De urbibus"; p. 88: "Tabes ac sordes pestem invehit civitatibus."

³³ "Desid. Erasmi Roterodami Podagrae et calculi ex comparatione utriusque encomium in praefatione Dialog. Chrysostomi" in: Caspare Dornavio (Dornau, Casper, 1577-1632): *Amphiteatrum sapientiae Socraticae joco-seriae, hoc est, Encomia et commentaria...* (Hanoviae, Danielis ac Davidis, 1619), vol. 2, p. 202. The preface was originally published in *Divi Joannis Chrysostomi* (Chrysostomus, Joannes, Saint, patriarch of Constantinople, d. 407) *De sacerdotio... Dialogi sex* (Basileae, apud J. Frobenium, 1525).

example, in 1529 Erasmus became one of the first to describe syphilis outside medical literature. He called it the Spanish or French pox. A victim of the illness, Ulrich von Hutten, who was a friend of Erasmus, called it *Morbus Gallicus* in his *De guiaci medicina*.³⁴ Fracastoro's poem *Syphilis* finally established its name in 1530.³⁵ Rabelais then described syphilis (vérole) in his *Gargantua*.³⁶ Erasmus wrote about syphilis in his *Colloquia familiaria*³⁷ under the title, "Connubium impar" (The unequal marriage).³⁸ In the dialogue of Petronius and Gabriel in this work, Erasmus gave an accurate description of the syphilitic symptoms of Pompilius Blendus, who had just married the young and healthy Iphigenia. But Erasmus went beyond a mere description of Blendus' illness. He brought to light the nonsensical nature of a marriage between a sick and a healthy person. Four and a half centuries ago, Erasmus suggested to the pope that marriages between syphilitic and healthy persons be nullified.

Erasmus' views about hygiene were those of Hippocrates, Galen, and Plutarch. He held no new or original ideas. The great significance of his views lies in the rediscovery and propagation of the teachings of the classics. Erasmus excelled in the construction of spirited appeals to the interest of the general reader, and in the demonstration of how an ancient book might be made to minister to modern demands. His works on education are imbued with rules and advice concerning hygiene and the everyday rules of good health. His *Christiani matrimonii institutio*,³⁹ first published in Basel and Antwerp in 1526, and his *De pueris statim ac liberaliter instituendis*,⁴⁰ printed in Paris and Strasbourg in 1529, are family handbooks on health and how to raise a healthy child, based on Hippocrates, Galen's *De sanitate tuenda*, and Plutarch's *De tuenda sanitate praecepta*. Erasmus again went into the smallest details in describing, for example, the hygiene of the newborn, the hygiene of breast feeding, etc. Erasmus differed with the current view that a child is ready for the parents' attention when he is seven or

³⁴ Ulrich von Hutten, (1488-1523) *De guiaci medicina et morbo gallico liber unus* [Moguntiae, in aedibus Joannes Scheffer, 1519].

³⁵ Girolamo Fracastoro (1483-1553) *Syphilis, sive morbus gallicus*. Veronae [Stefano dei Nicolini da Sabbio] 1530.

³⁶ *Op. cit.* "Prologue" ; chapters XIII, XIV.

³⁷ *Opera*, vol. 1, pp. 526-756.

³⁸ *Opera*, vol. 1, pp. 702-705.

³⁹ *Opera*, vol. 5, pp. 513-602.

⁴⁰ *Opera*, vol. 1, pp. 420-444.

eight years old, and stressed the importance of the physical and intellectual care of the newborn baby from the first year of his life.

Erasmus was strongly in favor of man involving himself in action against epidemics. He perceived ways and possibilities of preventing illness, as well as the power of medicine as a science and a profession. But behind everything, he saw the will of God also. In his *Consultatio de Bello Turcico*,⁴¹ he called for "moral revival"—through the righteous interpretation of Psalm 28—as the prerequisite for all further steps in fighting epidemics. "All the misfortunes hitting Europe and the different kinds of sicknesses were ever-present reminders that humanity had to return to a more moral way of life." He was further shocked "that the courtier and man of the world were proud to suffer from scabies gallica, and despised those who did not."

Erasmus' influence and fame were so great in Europe at this time that the pope could do nothing to counter his writings. Twenty-one years after Erasmus' death, however, some of his works were publicly burned in Rome, by order of Pope Paul IV, and seven years later, in 1564, the Council of Trent placed Erasmus' works on the Index.⁴²

While very interested in medicine, Erasmus was not otherwise interested in the scientific achievements of his time. The humanists generally continued to display hostility toward empirical scientific research to the end of the 16th century. From Petrarch to Marsilio Ficino and Francesco Pico della Mirandola, they painted a dim picture of the significance, and even the possibility of science.⁴³ Erasmus' source for scientific knowledge was antiquity. In his correspondence, Erasmus did not mention Leonard Fuchs, whom he presumably met in Basel.⁴⁴ He did not use maps or place names and was not interested in new geographical discoveries.

⁴¹ "Utilissima consultatio de bello Turcis inferendo, & obiter enarratus Psalmus XXVIII." *Opera*, vol. 5, p. 292.

⁴² Franz Heinrich Reusch, *Der Index der verbotenen Bücher* (Bonn: Cohen, 1883), vol. 1, pp. 347-355.

⁴³ Ralph M. Blake [et. al.], *Theories of Scientific Method: the Renaissance through the Nineteenth Century* (Seattle: University of Washington Press, 1960). p. 4-7.

⁴⁴ Professor Roland Herbert Bainton states in his *Erasmus of Christendom* (New York: Scribner's, 1969, p. 242) that Erasmus "in correspondence with Brunfels and Fuchs never mentions their herbals." This is very true concerning Brunfels, but I could not find any indication that Erasmus and Fuchs were in correspondence. The Leonhard Fuchs mentioned in some of Erasmus' letters seems to be the father-in-law of Bonifacius Amerbach, not the physician. Furthermore Erasmus was dead when the first full edition of Fuchs' herbal (*Stirpium historia*, Basel, 1542) was published.

I think he was afraid of geographical expansion, because this just would make it harder to govern the world and maintain peace. There is no mention in his letters or works of the New World. Erasmus was and wanted to remain a European.

Erasmus' critical but nonscientific mind had no interest in natural philosophy or metaphysics. Besides the lack of metaphysical inclination, Erasmus had rational views on the problems surrounding him. He was not at his strongest in defending the concept of free will against Luther. His rationalistic approach to the issues later earned him the name "Voltaire of the Renaissance" though the methods in which Erasmus believed were much different from those of Voltaire. The scientific idea of macrocosm and microcosm did not touch Erasmus; his world was the microcosm, and nature meant, first of all, human nature. He described it with meticulous care from the manners of his servant to the duties of the Prince. He described human nature in order to change it, in an overall attempt to change his neurotic age to a peace-loving society. The reasons which justify the great efforts for peace being made in the world today are similar to the justifications employed in Erasmus' time. *The Education of a Christian Prince*⁴⁵ suggests much that is agreed to by many today, for example, that war can only be eliminated finally by the reformation of human nature. Magic⁴⁶ had no place in his universe; although he was an acquaintance of Reuchlin, cabala⁴⁷ did not interest him.

There were just a few occasions when Erasmus seemed to notice the scientific currents and discoveries of his time. In 1519, he wrote to Petrus Mosellanus⁴⁸ mentioning that he had consulted astrologers on the possible relationship between the great epidemics of the year and the eclipse of Mercury and Saturn (which was visible from Basel). He translated into Latin Lucian's dialogue *De astrologia*⁴⁹ and sent a copy of the translation to Giovanni Baptista Boerio. Erasmus addressed Boerio as a physician skilled in astronomy, and expressed the hope that if the work were published, it would receive some corrections from Boerio.⁵⁰

⁴⁵ *Institutio principis Christiani* [Basileae, apud Joannem Frobenium, 1516].

⁴⁶ Erasmus spoke out strongly against magic in "Exorcismus, sive spectrum." *Opera*, vol. 1, pp. 633-636.

⁴⁷ Erasmus agreed with Colet not to follow the cabalistica of Reuchlin. *Epistola*, 593, lines 15-20. Also *ibid.*, 967: line 71: "For my own part I never had any fancy for the cabala or the talmud."

⁴⁸ *Epistola*, 948, line 18.

⁴⁹ *Opera*, vol. 1, pp. 293-296.

⁵⁰ *Epistola*, 267.

Erasmus expressed his views on astrology in 1519 in his letter to Peter Zupetinus⁵¹ and the subject was a frequent target of his satire. He made fun of alchemy and the transmutation of metals in the *Praise of Folly* and in the *Christiani matrimonii institutio* (Institution of Christian Marriage).⁵² The impostor alchemist is also the subject of his *Alcumistica*.⁵³

Erasmus liked only a few ideas originating in foreign (non-European) countries. One of them was the concept of the Egyptian hieroglyphics. In the 1508 edition of his *Adagia*,⁵⁴ he wrote that this "visual language" could help develop universal unity. Twenty years later Erasmus brought up the same subject again in a letter addressed to Sigismund I.⁵⁵

In the Renaissance, the great age of the arts, Erasmus had no eye for the beauty of nature or for the works of great artists of his time. It seems to be certain that his friendship with Holbein and Dürer had nothing to do with their art, rather with their humanistic views and their intellectual place in Erasmus' world. As one observes Dürer's engraving of Erasmus in 1524, one might wonder what Erasmus was thinking as he contemplated the strange vase of flowers which existed only in the artist's imagination. As Margolin summarized it, for Erasmus the knowledge of nature is not an intuition reserved to some initiates; rather, it is something emerging from a concrete discipline as the outcome of a deliberate search for the truth, the result of scholarship.⁵⁶

With no ear for science and no eye for the arts, Erasmus had a warm heart for medicine. Presumably, both his imaginary and real illnesses encouraged Erasmus' friendship with physicians. Many physicians were also humanists with common interests, culture, and goals. Furthermore, many of Erasmus' humanist friends never earned a Doctor Medicus degree, but, like Erasmus, helped to hasten the evolutionary process of medicine through their interest and influence.

Erasmus experienced many diseases. In his youth, he had quartan fever, and became neurasthenic at an early age. His digestion gave him trouble daily, and he suffered from rheumatic pains and gout. Residence in Venice was followed by kidney stone difficulties. At Cambridge he was

⁵¹ Epistola, 1005, lines 1-9.

⁵² *Opera*, vol. 5, pp. 562-563.

⁵³ *Opera*, vol. 1, pp. 636-639.

⁵⁴ *Adagiorum chiliades tres* (Venetiis, in aedibus Aldi, 1508). "Proverbiorum chiliarum secunda. Proverbiorum primum. Festina lente." I. 111, lines 1-20.

⁵⁵ Epistola, 2034, lines 67-78.

⁵⁶ J. C. Margolin, *L'idée de nature dans la pensée d'Érasme* (Basel: Helbing & Lichtenhahn [c. 1967]), p. 45.

acutely ill, perhaps of the sweating sickness. In his later years, he suffered from arthritis. In Basel, according to his unnamed chirurgus, whom he never believed, Erasmus had the plague,⁵⁷ and en route to Louvain, he developed tumors or ulcers. Microscopic examination of exhumed bones supposed to be Erasmus' showed marks of syphilitic origin according to Werthemann,⁵⁸ but Pfister judged the lesions to be typical of yaws.⁵⁹

The possibility of homosexual tendency during Erasmus' youth has been brought up by biographers. In monasteries, or any kind of restricted environment in which members of the same sex are locked together, some sexual interest towards those of the same sex usually exists. Furthermore, just before the time of puberty (which greatly varies), a person's interest in his own sex is dominant. It is also known that Erasmus was not happy at Steyn. His parents died early and his fellow monks did not understand him. He felt the need to have a confidant, whom he found in the person of Servatius Rogerius. Erasmus' letters addressed to Servatius⁶⁰ are not as much a literary exercise as they are documents showing the emotional crisis of a neurotic man. Later Erasmus himself realised this, became ashamed of the letters, and never published them.⁶¹ While the depth of their relationship is unknown, Erasmus gave a clue in a letter written many years later, on the 8th of July 1514. In his correspondence with Servatius, now the prior of the monastery, Erasmus excused himself for having "been inclined to those pleasures, but never their slave."⁶² This apology may extend to his other friendships, especially to the one with William Herman,⁶³ also a monk at Steyn. During this time Erasmus also wrote some poems in the manner of

⁵⁷ An account of Erasmus' illnesses and several of the treatments used by some of the physicians mentioned in Erasmus' correspondence, was compiled by C. D. O'Malley. His work was first published in a slightly shortened form, with a simplified bibliography: "Desiderius Erasmus. The spirit and the flesh." *JAMA*, April 5, 1971, 216: 66-70. Republished with full bibliography under the title "Some incidents in the medical history of Desiderius Erasmus" in: P. Smit & R. J. Ch. V. ter Laage, eds., *Essays in Biohistory* (Utrecht: International Association for Plant Taxonomy, 1970).

⁵⁸ A. Werthemann, *Schädel und Gebeine des Erasmus von Rotterdam*. (Basel: Emil Birkhäuser, 1930), pp. 37-47.

⁵⁹ C. R. Pfister, "Zur Krankheit des Erasmus," *Schweizerische Medizinische Wochenschrift*, 1936, 66: 846.

⁶⁰ Allen lists 15 letters written by Erasmus to Servatius between 1487 and 1506, one letter in 1514.

⁶¹ Hyma, *op. cit.* (n. 5 above), pp. 160-162.

⁶² Epistola, 296, lines 53-54. "Voluptatibus. etsi quondam fui *inclinatus*, numquam servivi." Allen prefers the reading "inclinatus" but some MSS contain "inquinatus."

⁶³ Epistola, 81.

his letters. His "Oda amatoria" may have been written to Servatius, and the "Carmen Asclepiadeum . . . ad amicum suum" probably to William Herman.⁶⁴ Both poems were written around 1487. That Erasmus presumably did not go beyond what was meant at that time by the sentimental friendship inspired by the *Devotio Moderna* was due partly to his temperament. If Erasmus had not been a class I on the sexual scale, opposed on the same scale by Luther, a type VIII, as Darlington suggests in his *Genetics and Man*⁶⁵ Erasmus' experiences would have seemed far more upsetting and unconventional.

Additional poems bear testimony to Erasmus' neurotic intervals. One of them, written sometime in 1496 when Erasmus was in low spirits during an illness, is entitled, "Carmen de suis fatis."⁶⁶ The tone of another poem written in August 1506 is even more desperate. At that time Erasmus was about forty years old and had just begun to achieve fame. Traveling in the Alps to Italy for the first time, he experienced a sudden depression. In the beautiful poem "Carmen de senectute,"⁶⁷ Erasmus lamented the discomforts of old age. He felt that he was approaching the end of his life and that both his body and mind were losing their strength. Erasmus was convinced that old age replaced youth between thirty-five and forty, and that he would die before he was fifty. Gilbert states that Erasmus' belief that death came at fifty was realistic since the life expectancy during the Renaissance was about forty years.⁶⁸

Because he suffered from many diseases and was constantly traveling, Erasmus had many physicians. Not his first, but definitely his best known physician when Erasmus was young, was William Cop (or Gulielmus Copus, ca. 1460-1532). Cop, a well-known physician to Francis I, was famous as a translator of Galen and Hippocrates and as a humanist. Cop was a good friend of Erasmus and served as his physician for more than three decades. He was the unlucky doctor to be twice beaten by Saint Genevieve in the healing of Erasmus' quartan fever. Cop had just

⁶⁴ Reedijsk, *op. cit.*, (n. 21 above), pp. 143-145.

⁶⁵ C. D. Darlington, *Genetics and Man* (London: Allen & Unwin [c. 1964]), pp. 309-317.

⁶⁶ "Eiusdem in morbo de fatis suis querela." *Opera*, vol. 1, p. 1024.

⁶⁷ "Ad Gulielmum Copum medicorum eruditissimus de senectute carmen." *Opera*, vol. 4, p. 595-[599].

⁶⁸ Creighton Gilbert, "When did a man in the Renaissance grow old?" *Studies in the Renaissance*. (New York: The Renaissance Society of America, 1967), vol. XIV, pp. 11-12.

obtained his degree in Paris in 1495 when Erasmus was struck by the intermittent fever from which he had suffered as a boy. In 1500, Erasmus wrote to James Batt concerning a new attack of fever:

We are fighting against it with every care and with the aid of doctors, but have scarcely escaped yet, being still in a doubtful condition. And if that fever does get hold on me again, it will be all over, my dear Batt, with your Erasmus. However we are not in despair, and have confidence in St. Genevieve, whose present help we have more than once experienced, and all the more as we have the advice of Wilhelm Cop, a most skillful doctor, and not only that, but a faithful friend, and what is more, a votary of the Muses.⁶⁹

Their friendship lasted for years. On February 6, 1517, Cop wrote in the name of Francis I to invite Erasmus to Paris: "The most Christian king promises, if you make up your mind to live with us here, to maintain you so liberally that you will never have occasion to regret such resolution." ⁷⁰

The typical "Erasmian" answer to Cop was dated February 23: "How happy is France in such a sovereign! How lucky are you in such a patron! How highly favoured am I by the notice of so great a monarch! Nevertheless, I am not yet in position to give any certain answer to the letter which you wrote me by the king's command." ⁷¹

In 1526, then in Basel, Erasmus wrote to Cop, rendering report on his current health and asking for his help. The first part of the letter, dated August 27, offers a classic example of the manner in which Erasmus described his health problems to his friends:

I desire ardently your presence, Cop, you most fluent of doctors, in my very shattered state of health. Since I had started to drink my wine diluted with a decoction of liquorice, the stone in the kidney treated me more kindly and my friends congratulated me already as if I had got rid of it. But last July, a vehement flood of urine sprang up, not without damage to the urinary tracts, which was attended from the beginning with violent pains, as if a stone was stuck in the bladder which could not be removed. Meantime an exorbitant quantity of urine flowed, plastery or puslike I should rather say. Alarmed, I consulted the doctors we have here; they are of a kind with the people here, who do not care very much for their health nor do they drink moderately. They gave me no hope. One advised warm baths at Baden, another guessed this, a third that. So I sent them away, the doctors, and entrusted myself to God. And though that torturing pain has diminished and also the quantity of urine, yet it is clear that an ulceration or soreness of the urinary organs exists. It is said that Thomas Linacre died of this

⁶⁹ Epistola, 124, lines 10-17.

⁷⁰ Epistola, 523, lines 13-15.

⁷¹ Epistola, 537.

disease. As I am not permitted to visit you, on account of my physical condition and the evils of war, I beg of you the more emphatically to come to my aid by letter.⁷²

In addition to the well-known Cop we must mention two obscure physicians whom Erasmus met in 1498 or earlier. One is Master Martin, to whom Erasmus wrote a letter, presumably in July of 1498, from Brussels. The letter itself has no medical interest but the addressee is "Magister Martinus Medicus," and Erasmus reported that he was in good health. It is possible that Master Martin (from Gouda?) was an old family friend and probably he was one of Erasmus' childhood physicians.⁷³ The other obscure physician is Francis, physician at Tournehem. His name is mentioned in Erasmus' letter dated November 29, 1498. It was written from Paris and addressed to James Batt,⁷⁴ then tutor at the castle of Tournehem, located between Calais and St. Omer. Through him, Erasmus sent his greetings to Francis, who was presumably the physician of Philip of Burgundy, who had recently died. Erasmus greeted Francis again in a letter written to Batt from Paris in March of 1500.⁷⁵

Ghysbert (or Ghisbertus), who was the town physician of St. Omer, was first mentioned in 1499 in another letter written by Erasmus to Batt.⁷⁶ Ghysbert, whose name appears again and again in letters during the following years⁷⁷ treated Erasmus for two decades. Erasmus must have been satisfied with him, although he sometimes had second thoughts about Ghysbert's medical judgements. On June 5, 1516, while under the care of Ghysbert, Erasmus wrote to Thomas Linacre, asking him to send more information about the medicine Linacre had prescribed for him in London.⁷⁸ But the friendship and the physician-patient relationship continued for many years. Ghysbert was greeted again in Erasmus' letter of September 17, 1517: "Salutabis Ghisbertum medicum, amicum perpetuum"⁷⁹ and in 1521 Erasmus reported still feeling close to Ghysbert.⁸⁰

⁷² Epistola, 1735, lines 1-18.

⁷³ Epistola, 76.

⁷⁴ Epistola, 81, lines 130-133.

⁷⁵ Epistola, 123, line 26.

⁷⁶ Epistola, 95, line 11.

⁷⁷ Epistolae, 161, 163, 167, 252, 273, 288.

⁷⁸ Epistola, 415.

⁷⁹ Epistola, 673.

⁸⁰ Epistola, 1211.

The year 1499 was an important one in Erasmus' life. This was the year he first visited England, met Thomas More, and started a long and interesting correspondence with him.⁸¹ Erasmus' companions on the Continent had been narrow-minded and plebeian. In contrast, while he was in England, the noblest men of the time, such as John Fisher, were among his intimates, and John Colet and Bishops Warham and Cranmer were his patrons. Also in 1499 Erasmus presumably first met Thomas Linacre.⁸² After returning from Padua where he took the degree of doctor of medicine, Linacre, full of the spirit of the Italian Renaissance, formed a circle of Oxford scholars. Eventually, in 1509, he was made one of the king's physicians and in 1518 he helped to found the Royal College of Physicians of London. During these years there was always a connection—a physician-to-patient and a scholar-to-scholar relationship—between Linacre and Erasmus but, unfortunately, only three uninteresting letters survive. However, a great deal of information is included about their relationship in letters which Erasmus wrote to their mutual friends.

Erasmus spoke highly of Linacre's medical knowledge, his treatments, and the physician's practical good sense in a letter written to Willibald Pirckheimer five months after Linacre's death in March 1525. As usual, Erasmus described his symptoms, Linacre's diagnosis, and the medicine prescribed by him for his calculus.⁸³ Not only did Linacre give medical advice to his friend Erasmus, but, sometime in 1510 and 1511, in a gesture which reveals the depth of their friendship, he advised Erasmus not to beg from wealthy patrons. We also know this from Erasmus himself, who brought the matter up in a letter to John Colet, written on October 29, 1511.⁸⁴ The observation that some characters in Erasmus' works remind us of Linacre reflects the intensity of their relationship. Linacre, the author of many grammatical works,⁸⁵ may be the physician and sexagenarian scholar in one passage of *Moriae encomium*.⁸⁶

Just before leaving Orleans for Paris in December of 1500, Erasmus wrote a letter to Petrus Anglebermus (Pierre d'Angleberme), a physician practicing in Orleans. In this letter,⁸⁷ Erasmus thanked him for the

⁸¹ Epistola, 114.

⁸² Not in 1497, as stated in the *Dictionary of National Biography* (London, 1893), vol. 33, p. 267.

⁸³ Epistola, 1558, lines 79-135.

⁸⁴ Epistola, 237.

⁸⁵ Thomas Linacre, *De emendata structura, Latini sermonis libri sex* (Londini, apud R. Pynsonum, 1524), and other grammatical works.

⁸⁶ *Opera*, vol. 4, p. 373, lines 28-32.

⁸⁷ Epistola, 140.

present of aromatic wine, underlining its medical importance. Erasmus probably received the wine in return for the assistance which he promised in aiding the physician's son⁸⁸ in his Greek studies in Paris. Angleberme was the physician of Erasmus' roommate, Augustine Vincent, and he is presumably also the unnamed physician to whom, for his medical services, Erasmus offered the works of Homer in the name of his friend Augustine.⁸⁹

In 1500, when Erasmus was in Paris, he probably met Jean Ruel (or Jean de la Ruelle, 1474?-1537) for the fourth time; in 1508, Ruel became the dean of the Medical Faculty and physician to Francis I. He soon became famous for his corrected editions of Hippocrates, Galen, Celsus, and Dioscorides, and for many other works. Erasmus never omitted the opportunity to send his greetings to Ruel when he was writing a letter to a mutual friend. In February 1517, Erasmus was in an optimistic mood and, in a letter to Wolfgang Fabricius Capito, he praised the monarchs of Europe for working for peace, and in summarizing the achievements of the time, named his favorite physicians. Jean Ruel was one of them, in the company of Nicolaus Leonicensus, Ambrose Leo, William Cop, and Thomas Linacre.⁹⁰

In 1505 Erasmus met the Genovan Giovanni Baptista Boerio, in England, where he was the physician of Henry VII. In 1506, Erasmus accompanied Boerio's sons, John and Bernard, to Italy to assist them with their studies. Although Boerio and Erasmus were still close friends in 1512,⁹¹ with time this friendship ended. Erasmus' letter to William Gonell (or Gunell), dated April 28, 1514, shows that the generally polite, reticent, and deliberate Erasmus also knew the vitriolic style of many humanists, which they used when they were out to "get" a fellow intellectual. "It is a puny insect"—Erasmus wrote about Boerio—"but as venomous and pestilent as any bred by sea or land. It is made of poison, which it breathes even from a distance both on friends and foes. . . . If you wish to know the name, it is one quite unsuitable to the character of John Baptist." ⁹² But with time the hatred toned down. On January 13, 1530, after Boerio's death, Erasmus wrote to the two

⁸⁸ Jean-Pyrrhus (or Jean-Pierre) d'Angleberme, jurisconsult and humanist, ca. 1470-1521.

⁸⁹ *Epistola*, 132: "Erasmi epistola pro amico quodam scripta ad medicum."

⁹⁰ *Epistola*, 541, lines 55-57.

⁹¹ *Epistola*, 267.

⁹² *Epistola*, 292, lines 17-24.

sons of Boerio: "The friendship which I had with your father of blessed memory was overcast by a little cloud." ⁹³

Reyner Snoy (1477-1537), the Gouda physician and man of letters, belonged to Erasmus' circle. He became a doctor of medicine in Bologna and in Holland he became physician to Adolph of Burgundy. Their friendship may well date to the time of Erasmus' boyhood. The first reference to Snoy appears to be in Erasmus' letter to James Mauritsz written on April 2, 1506. Another greeting was sent to Snoy through Mauritsz on November 4 of the same year.⁹⁴ While Erasmus was in England (supposedly in Cambridge) in July 1513, Snoy obtained possession of a manuscript volume of Erasmus' early poems, which had probably been preserved in the monastery at Steyn. Snoy published this volume in the same year at Gouda under title *Herasmii Roterodami Silva carminum*. The only known letter written by Snoy was dated September 1. Allen supposes that the year was 1516, following the logic that in that year Erasmus was preparing to settle in the Netherlands and that Snoy may have taken the opportunity to renew their former acquaintance.⁹⁵

In the same year Erasmus met another physician who turned out to be quite important several years later. Paulus Ricius (or Riccius, or Ritius, fl. 1506-1532), a native of Germany and a Jewish convert to Christianity, became a professor of philosophy in Pavia, and subsequently physician to Emperor Maximilian and to Ferdinand. Erasmus first met him in Pavia, probably in September 1506.⁹⁶ Ricius was again called to Erasmus' attention by William Budaeus in 1518,⁹⁷ and in 1520 Erasmus was already in correspondence with him.⁹⁸ In 1525, Erasmus reported to Willibald Pirckheimer that Ricius was curing his calculus.⁹⁹

In the years 1506-1509, Erasmus toured Italy. He visited Bologna and Rome and in July 1507 he arrived in Venice to work on his *Adagiorum chiliades* with Aldo Pio Manuzio. Here Erasmus met Ambrogio Leone (or Ambrosius Leo Nolanus, d. 1525), a native of Nola, a doctor of medicine of Padua and, later, a professor of medicine in Naples. The two letters¹⁰⁰ which they exchanged reveal Leone to have been a

⁹³ Epistola, 2255, lines 9-10.

⁹⁴ Epistolae, 190, 202.

⁹⁵ Epistola, 458.

⁹⁶ Epistola, 549.

⁹⁷ Epistola, 810, lines 358-359.

⁹⁸ Epistola, 1160.

⁹⁹ Epistola, 1558, lines 56-60.

¹⁰⁰ Epistolae, 854, 868.

humanist, the author of several medical works, and the translator of Actuarius' *De urinis*.

During his long Italian journey in 1509, Erasmus visited Ferrara and met Nicolo Leonicensi (1428-1524), who taught medicine there.¹⁰¹ Their common interest in the classics helped the development of a close relationship between the two humanists. Erasmus' letters reveal and confirm their continuous interest in each other. For a long time after Leonicensi's death, Erasmus quoted Leonicensi in many letters addressed to humanists interested in medicine.

While waiting for the end of the epidemics in London, Erasmus, terrified by the plague, was in Cambridge in 1513 with Sixtinus and Augustinus Agge, the latter of whom was a physician. Agge, a bachelor of arts in Paris in 1506, became a physician during the following years and presumably attended Erasmus on several occasions. Agge left Erasmus and England in 1513, but Erasmus, who was afraid to travel through the plague-infected countryside, stayed in Cambridge. He gave an account of his excited state in a letter written to Ammonius on September 1, 1513: "The plague is as rampant in London as Mars is with you. We are therefore still in Cambridge, looking out daily for the opportunity of flying away, but this is not afforded to us. . . . Sixtinus has already flown off to Brabant." ¹⁰² In an undated letter written between 1515 and 1518, Agge later described his life in Brabant, which he found ravaged by war.¹⁰³

Willibald Pirckheimer (1470-1530), a humanist, had settled in Nuremberg after studying Greek and law in Italy. His famous work, *Podagrae laus*, illustrated by Dürer, was first published in Nuremberg in 1522. It was republished several times and became a "bestseller." Because of Pirckheimer's interest in literary matters, Erasmus' work may have been brought to his attention. In any event, they made their acquaintance at the end of 1513 or in 1514¹⁰⁴ and maintained a frequent correspondence and a deep friendship. Erasmus, who frequently gave an account of his health to physicians through letters in order to get advice, did the same in his letters to Pirckheimer, but on another basis, that of *l'art pour l'art*. Pirckheimer, especially when he resigned his offices and gave himself up to learned leisure, was a good, cooperative listener to Erasmus

¹⁰¹ Epistola, 541, line 55.

¹⁰² Epistola, 273, lines 10-14.

¹⁰³ Epistola, 511.

¹⁰⁴ Epistola, 318. (Pirckheimer's letter to Beatus Rhenanus.)

when he wrote about his health problems. Pirckheimer's wealth enabled him to help less fortunate men of learning, and he sent many gifts to Erasmus. On March 14, 1525, Erasmus, expressing his thanks for a recent gift, wrote: "I received safely the very pretty ring which you desired me to have as a memento of you." And then Erasmus, free from any superstition, added:

I know that gems are prized as bringing safety when one has a fall. But they say, too, that if the fall was likely to be fatal, the evil is diverted on to the gem, so that it is seen to be broken after the accident. . . . There is no part of life into which magical superstition has not insinuated itself: if gems have some great virtue, I could have wished in these days for a ring with an efficacious remedy against slander's tooth.¹⁰⁵

"Giraerdus Listrius, a skillful physician, with an admirable knowledge of Latin, Greek and Hebrew literature": so reads the introduction of Gerard Lister (or Listre, fl. 1513-1546) in Erasmus' own words in a letter written to James Wimpfeling dated September 21, 1514.¹⁰⁶ Lister, who studied medicine in Basel in 1514, apparently never finished his medical education. He was born between 1470 and 1480 in Rhenen in the Netherlands. While in Basel, he contributed some Greek verses to the title page of Erasmus' translations from Plutarch. Around 1516 Lister was appointed rector of the school at Zwolle, and later in Amersfoort. In Zwolle he helped to edit some publications of Erasmus' works, and while still in Zwolle he was accused, without any reason, of poisoning John Murnell. Far from abandoning his friend during these days, Erasmus stood up strongly for Lister. Erasmus wrote from Louvain one month after Murnell's death: "Divert your mind with study; and that rumour, which has arisen out of mischief, will soon die away of its own accord; for who does not know that your character is utterly averse from any malice of that sort." ¹⁰⁷

Erasmus stood up for Lister, a healthy man. His reaction to Ulrich von Hutten (1438-1523) when the latter became ill with syphilis was just the opposite. Hutten was not a physician either, but he established his place in medical history as the author of *Febris dialogus* and the *De guaiaci medicina et morbo Gallico*, both first published in 1519. In the latter work, Hutten described the spread of syphilis in his body. Erasmus praised Hutten,¹⁰⁸ whom he met first in 1514, as long as he

¹⁰⁵ Epistola, 1558, lines 14-29.

¹⁰⁶ Epistola, 305, lines 184-186.

¹⁰⁷ Epistola, 697.

¹⁰⁸ Epistola, 300.

was not ill. The two men, who belonged to those few who tried to form a bridge between the Humanists and the Reformers, became close friends. But when Hutten, dying from syphilis, dragged himself from Ebernberg to Basel he knocked on Erasmus' door in vain. Because he feared the new disease, its means of spread not yet well established, Erasmus refused to see him. But he also refused his friend because, though he himself had begged favors from many mighty men, he did not like those who begged from him. Erasmus admitted this by turning Hutten away, and tried elaborately and in vain to defend himself from Hutten's offended attacks.¹⁰⁹

Erasmus probably met John Clement (d.1572) in Thomas More's household in the spring of 1515 or the summer of 1516. More took Clement into his family and made him his children's tutor. Clement was an excellent tutor, but as it turned out he gained greatly also by breathing the humanistic atmosphere of More's circle. Clement's name is first mentioned in Thomas More's letter to Erasmus dated February 17, 1516.¹¹⁰ In 1520 Clement was studying medicine in Louvain and in the summer of 1525 he helped to edit the Aldine Galen. During this time Clement's name appeared several times in letters of More, Vives, and other humanists addressed to Erasmus. In 1528 he was admitted as a fellow of the Royal College of Physicians, of which he was elected president in 1544. While there is no clue as to whether Clement ever attended Erasmus as a physician, he was definitely another humanist-physician belonging to Erasmus' circle.

Matthaeus Adrianus was introduced to Erasmus in 1517 by Berselius, to whom Adrianus had taught Hebrew. He was a Spanish Jew who had converted to Christianity, and Erasmus refers to him "genere Hebraeus sed religione iam olim Christianus, arte medicus."¹¹¹ On Erasmus' invitation, Adrianus moved to Louvain to teach Hebrew; Erasmus reported this to Hermann, Count of Neuenahr on November 30, 1517.¹¹²

Adrianus, who earned his doctor of medicine degree before 1513, attended Erasmus in 1518.¹¹³ In about January 1518, Erasmus asked John Molendinus to dispatch his greetings to Adrianus: "I congratulate Master Adrian the physician, and indeed almost envy him, not only for his ample converse with the stars, and for his happy progress in Greek,

¹⁰⁹ *Spongia...adversus aspergines Hutteni* [Basileae, per Jo. Frobenius, 1523], pp. [7-9].

¹¹⁰ Epistola, 388, line 173.

¹¹¹ Epistola, 686, lines 5-6.

¹¹² Epistola, 722, lines 10-12.

¹¹³ Epistola, 867, lines 204-208. Erasmus refers here to Adrianus simply as Hebraeus.

but also because—thanks to Linacre—he has the *Therapeutics*, for that is the direction in which my scent is led by his prognostics. Pray take the trouble to convey my salutation to the man.”¹¹⁴

“Vives is one who will overshadow the name of Erasmus,” wrote Erasmus to Thomas More in 1520.¹¹⁵ Erasmus recognized and fully enjoyed the value of his new young friend (Erasmus was twice as old as Vives). The physician Vives’ approach to medicine was quite similar to that of the layman Erasmus. In his *De disciplinis libri XX*,¹¹⁶ Vives suggested to the medical student the same classical authors whose works one could perceive occupying a place on Erasmus’ desk. However, neither of them thought that reading of classics alone provided enough knowledge. Vives urged medical students to observe nature and to dissect the body to learn its secrets,¹¹⁷ while Erasmus conducted observations of his own body. Their rich correspondence and Erasmus’ praise of Vives suggest that Vives meant more than many other humanists to Erasmus: there was not only an intellectual interest, but also a deep father and son sympathy between the two men. At the suggestion of Erasmus, Vives published in 1522 an elaborate commentary on Augustine’s *De civitate Dei* and Erasmus later urged Vives to lecture on St. Augustine.¹¹⁸ Vives proposed a collected edition of Erasmus’ works,¹¹⁹ an undertaking which actually had to wait another 14 years. When Erasmus was invited to become tutor of young Ferdinand, he recommended in his place Vives.¹²⁰ Erasmus’ star sank very soon in official Spain. Vives reported in 1527 that the reactionary Church in Spain started investigations of Erasmus’ orthodoxy¹²¹ and, in 1534, Erasmus wrote about the imprisonment of Spanish Erasmians.¹²² During these years Vives lived in Bruges, where he died in 1540.

Erasmus first sent his greetings to Adrianus(?) Clavus (or Clava) in a letter written on September 7, 1517, to Antony Clava, in which Erasmus wrote: “Saluta medicum Clava Clauum.”¹²³ He was a physician of Ghent, who sometimes treated Erasmus. Clavus’ name is

¹¹⁴ Epistola, 755, lines 27-34; line 29: (MS:) Therapēticen—a manuscript by Linacre?

¹¹⁵ Epistola, 1107, lines 6-7.

¹¹⁶ (Coloniae, apud Joannem Gymnicum, 1536), pp. 365-366.

¹¹⁷ *Ibid.*, p. 367.

¹¹⁸ Epistola, 531, lines 44-46.

¹¹⁹ Epistola, 1732, lines 9-11.

¹²⁰ Epistola, 917.

¹²¹ Epistola, 1836.

¹²² Epistola, 2965.

¹²³ Epistola, 650, lines 9-10.

mentioned again by Peter Gilles in his letter to Erasmus dated September 27, 1517: "When I feel I have a little strength, I shall fly to you. I am inclined to agree with you in what you write about Clavus; nevertheless I am now beginning somehow or other to get better."¹²⁴ We may suspect that Erasmus gave an unfavorable opinion to Gilles about Clavus, and that neither of them gained by Clavus' treatment. It is quite possible that Clavus is the physician called "Adrian" in Erasmus' letter to John Molendinus written in January 1518,¹²⁵ and in the letter to Peter Gilles, dated April 17 [1518].¹²⁶ However, Adrian is mentioned more favorably than Clavus in the above quoted letters.

The importance of the Greek language is the topic of many of Erasmus' writings. He himself made great efforts to get the best teachers to help him master the language.

The same effort has been made by some of the most distinguished physicians of our time, William Cop, Ambrose Leo of Nola and Nicolaus Leonicensus, when they were already advanced in years, and yet not without success, while Thomas Linacre and Ruelle learned Greek at an earlier age. . . . There is no art in which mistakes are more dangerous, and this is the reason why all the most intelligent physicians apply themselves to this study, and I think we shall soon find that it will be considered presumptuous for a man to profess to be a physician without it. It is certainly something, to hear Hippocrates the prince of this art, and Galen his fellow, and Dioscorides and Paulus Aegineta, discoursing in their own tongue.

So wrote Erasmus from Antwerp to Henricus Afinius (or Affinius or Afine) in February 1517.¹²⁷ Erasmus wrote this letter at the suggestion of Peter Gilles (or Petrus Aegidius of Antwerp, 1486-1533), who had written to him at the beginning of February: "my friend Afinius, who delivers this letter to you, is anxious to be introduced to you."¹²⁸ Afinius was city physician of Antwerp at that time and was probably a pupil at the Collegium Castri of Louvain University. The correspondence following the first letters shows no real friendship between the two, nor does it provide any scientific experience for the reader. But their interest in each other is typical of the morality of the wealthy physician trying to buy fame through expensive gifts and the famous humanist running out of funds. In the following letters there is much talk of some valuable

¹²⁴ Epistola, 681, lines 6-8.

¹²⁵ Epistola, 755, lines 27-30.

¹²⁶ Epistola, 818, lines 4-6.

¹²⁷ Epistola, 542, lines 31-40.

¹²⁸ Epistola, 526, lines 3-4.

cups. "Pray give my compliments to the most erudite and courteous physician, Master Henricus Lyrensi. He informs me by his most courteous letter that the cups are now ready, and have no doubt they are. I cannot refuse a gift spontaneously offered by a friend, and will have to consider what return ought to be made." Erasmus wrote this to Pierre Gilles on August 28 [1517].¹²⁹ About the same time, Erasmus thanked Afinius for his offer: "I am much delighted, most erudite Henry, with your letter,—plainly yours, as it is most kind. It enables me truly to enjoy my Henry. As you have been buying such costly silver cups, I cannot but lovingly accept so kind an intention. But I am conscious of a variety of emotions. At one moment, I am ashamed to receive so great a present from a person whom I have rather wished to oblige, than have actually done so. At another moment I am ashamed to refuse a gift spontaneously offered."¹³⁰ Erasmus, in the latter part of the letter, explained that he might send a book, probably Theodore Gaza's Greek grammar with an inscription from Erasmus to Afinius. But Afinius certainly had something else, something more in his mind. He was a better businessman than physician. He knew that he could get much more out of Erasmus than one copy of an old book with Erasmus' autograph. No, Afinius wanted much more for his money. So Erasmus did not happen to receive the gifts for a long time. On the other hand, Erasmus was running out of tolerance. He asked Peter Gilles' help in putting pressure on Afinius. But this did not seem to work, so Erasmus around October 1517 blamed Gilles for it: "How I wish you could overcome that irritability of temper which is both injurious to your health, and is so far from being of any service in the dispatch of business that it is a serious impediment to it." Erasmus continued: "What was the use of being so angry with the doctor? I knew he would give nothing, only it was amusing to play out the play."¹³¹ But Erasmus continued the "play" which was serious business for him. A couple of weeks later (on November 15) he wrote to Gilles: "The doctor has asked for a fortnight's truce! If by any chance you see the man, do pretend you are ashamed to meet me, unless he fulfils what he promised, and let Nicolas, who heard him swear he would do it, say the same."¹³¹ But seemingly this tactic did not work either. So Erasmus decided to put pressure on Afinius himself.

¹²⁹ Epistola, 637, lines 16-19; and 638.

¹³⁰ Epistola, 687, lines 1-5.

¹³¹ Epistola, 712, lines 32-34.

On January 6, 1518, he wrote to Afinius :

Most learned of physicians, and best of friends, the day named has gone by over and over again, and every time without result. It may be that the stars of last year were not favourable to our intercourse. Do now, at any rate, under the better auspices of the year, send those often promised cups, so that our friends, who suspect I have been over trustful, may not appear to be right. Can I possibly suspect a person like you to be guilty of such conduct? You are too serious to make a game of any one, and do not think that you can regard me as a suitable object for such treatment. I have accordingly sent Thierry Martens to bring them to me. . . . Farewell, and if you sincerely respond to the regard I have for you, take care that Thierry does not return with empty hands. Do not put the day off any longer, bearing in mind that a great part of the value of favour is lost by delay. " ¹³²

This letter was not without success. The following letter written by Erasmus to Afinius on March 13, 1518, shows that the cups finally reached Erasmus' hands and that Afinius would get what he had hoped for :

In a recent survey of my library, most learned Afinius, I found in my hands a speech in the praise of the art of medicine, composed by me some time ago, when there was no subject which I did not attempt. It occurred to me at once, to present an oration, in itself far from excellent, to an excellent physician, so that by the mere attraction of your name, it might be commended to a wider circle of students. Meantime it will stand as some sort of evidence of my regard for you, until another occasion may arise, more worthy of our friendship. " ¹³³

And since the publication of Erasmus' *De laude medicinae* with a dedicatory epistle to Afinius, the latter's name has appeared along with the greatest humanists.

"As sincere as he was learned," wrote Erasmus in the *Adagia*¹³⁴ about Joachim Vadian (or Joachim von Watt, 1484-1551). Vadian, a St. Gall humanist, follower of Zwingli, one of the originators of the idea of the earth as paradise, visited Erasmus in Basel in June 1518. Vadian had received his M. D. degree a year earlier in Vienna. He was appointed town physician in St. Gallen where he practiced medicine until the end of his life. There are some traces that the two maintained contact. Erasmus mentioned Vadian's name in a letter written to Ulrich Zwingli in September 1522,¹³⁵ and Vadian's *Chronologia Abbatum Monasterii St. Galli*, begun in 1529, contains an eulogy of Erasmus.

¹³² Epistola, 753.

¹³³ Epistola, 799; and see no. 17, 1. [67].

¹³⁴ *Adagiorum opus* (Basileae, ex off. Frobeniana, 1533), p. 479.

¹³⁵ Epistola, 1314, lines 9-10.

"Erasmus Roterodamus N., Ferdinandi medico et praeceptor, S. C." : this is the address of Erasmus' letter,¹³⁰ written from Louvain on February 13, 1519, to Juan De La Parra (d. 1521), whom Erasmus did not know by name. De La Parra was physician to King Ferdinand of Spain. Erasmus came in contact with De La Parra, who was not well known outside Spain, when the court invited Erasmus to join De La Parra in teaching the young Ferdinand.

What the priest is to our souls, this the physician is to our bodies. He who expects a remedy must not conceal his ailment. And I do not doubt that you, with your experience, are used to keep that secrecy, which Hippocrates desires with great conscientiousness of those who practice that profession.

These are the introductory sentences of Erasmus' letter to John Francis in Basel, probably in October 1526. Erasmus, who was requesting medical treatment from Francis, gave the history and the symptoms of his illness in a long letter.

For some years now I have suffered very badly from renal calculus, and the labour, the delivery, and the conception of the stones did not end, so that I am astonished that my poor body has stood so many tortures. The torturing pain often caused me to vomit; thereafter my stomach did not bear any food except in a liquid state for 16 whole days. . . . Finally I felt at the surface of the glans something like we used to feel as young boys, when the wind passed over us, this is usually called cold evil. . . . I rubbed my belly under the umbilicus with oleum camamillarum—because this usually helps—and then I felt nothing any more. After all I yet drank . . . half a glass of Burgundy, diluted with water. . . . After my first sleep, I passed water with extraordinary pressure, while the urinary tracts were very much dilated under violent pain, which I however did not feel in the loins where it used to be the most vehement, but in the bladder and the muscles of the penis. I felt how a great quantity of small stones, gravel and dregs passed away with the urine and did burst the canals. This happened more than ten times that night without causing me pain in the stomach. That urine I did not keep, to my regret, though I kept that of the following day, which resembled milk with small pieces of stone. The deposit was plastery. Meanwhile I had a very disagreeable feeling in the bladder. I had a doctor called and a second and third, such as they are over here. Their opinions differed. I was afraid that the residuum in the bladder would petrify, for the pain held on for several days. At last diminished, it did not disappear altogether, but it became bearable. I therefore sent the doctors away and had recourse to a more moderate way of living. . . . I have fallen into the habit of passing water often, for fear that it will petrify in the bladder. . . . It is not gonorrhoea, nor fluxus cerebri, nor my spinal cord, for those diseases would make me weak, whereas I am rather full of life for the moment.

I surmise that I know the cause of the illness. For more than twenty years I

¹³⁰ Epistola, 917.

have been in the habit of standing when I do my writing and hardly ever sit down.... As it is inevitable that the stomach of one who writes standing is somewhat bent, I surmise that the stomach has begun to remove half digested food because the gastric juices had been led somewhere else and that this is the cause that the stone does not grow.... Now you know everything. If your science knows anything which might relieve this suffering—for I think that it cannot be removed—then you shall do a deed worthy of your humanity if you will impart it to me.¹³⁷

It is understandable that Erasmus gave such a detailed description of the symptoms of his illness, since John Francis was an old friend who had already treated Erasmus and had also sent some medicine to him from England. It is hard to say just how long they had known each other. There is little information about Francis. It is well known that Francis helped to start the College of Physicians in 1518. We may suspect that their friendship goes even further back, maybe to Erasmus' first or second visit to England. The first document, a letter written on September 1, 1520, in Louvain by Erasmus to William Burbank, inquires about Francis.¹³⁸ We know that Francis was mentioned as Consiliarius in 1523, in the Annals. And we are familiar with Erasmus' letter¹³⁹ written to Francis when the latter was physician in Wolsey's household. But Francis' name does not come up in Erasmus' correspondence after he wrote down his disorders to Francis in 1526, although according to Munk, Francis did not die before 1531.

Otto Brunfels (1488-1534) introduced himself to Erasmus in May 1520. At this time, Brunfels was getting more and more interested in the Reform. Presumably this was the reason why he contacted Erasmus. In the following year Brunfels left the Carthusian house of Strassburg. For a while he was very close to Erasmus but in the fall of 1523 Brunfels became sympathetic to the theories of Luther. During this time, Brunfels wrote mostly educational works. His letters show this change of mind and in December 1523 he attacked Erasmus in defence of Hutten.¹⁴⁰ During the next two years their correspondence was full of controversy, but in 1525 Brunfels, who was more a scientist than reformer, offered peace. Erasmus accepted.¹⁴¹ Brunfels became interested in medicine during these years. He edited Lorenz Fries' (of

¹³⁷ Epistola, 1759.

¹³⁸ Epistola, 1138.

¹³⁹ See no. 27.

¹⁴⁰ Epistola, 1406.

¹⁴¹ Epistola, 1614.



Colmar) *Spiegel der Artzney* in 1524, and Alessandro Benedetti's *Anatomice* in 1528. His first book, the first volume of the famous *Herbarium*, was printed in 1530, two years before he received an M. D. degree at Basel. Erasmus congratulated the new Doctor on April 10, 1533.¹⁴² There is, however, no indication that their connection ever became medical.

During his long stay in Basel, Erasmus took into his household some friends, or sons of friends. Crato Stalberg (or Kraft Stalburg) was such a boarder, or rather some sort of family member; he lived with Erasmus in 1522-23. Baumann states¹⁴³ that Stalberg was a physician from Amsterdam. This statement is probably based on Basil Amerbach's letter written to his father, Bonifac, on January 7, 1523.¹⁴⁴ Basil called his friend "doctor medicus Antwerpiensis," but this is definitely a mistake. Bierlaire called Stalberg a humanist and a pupil of Nesen,¹⁴⁵ and Melancthon, in his letter of January 3, 1524, asked Johann Hess to find a merchant for whom Crato could work as an apprentice.¹⁴⁶ In his letter of May 11, 1527, Erasmus confirmed that Crato entered into business life in Italy.

Just as it seemed important to state that Crato Stalberg was not a physician and was not a member of Erasmus' medical circle, it seems imperative to mention another man who was not among Erasmus' medical friends, but who could have had an influence on Erasmus' medical thinking. Presumably Erasmus never met Pierre Brissot (or Brisotus, 1478-1522) but he certainly knew of Brissot's controversial work, the *Apologetica disceptatio*, first published three years after the author's death by Antonius Luceus, with whom Erasmus would come in contact around 1534. In this work, Brissot, a reformer in the practice of bloodletting, opposed Arabian medicine and returned to the Hippocratic teaching of "derivative" bloodletting, the taking of large amounts of blood from an area close to the diseased part of the body. Brissot's name first came up in 1524, two years after his death, in John Angelus' letter to Erasmus.¹⁴⁷ After the publication of the *Disceptatio*, the medical world became divided

¹⁴² Epistola, 2788, lines 15-16.

¹⁴³ Baumann, *op. cit.* (n. 4 above), p. 50.

¹⁴⁴ Alfred Hartmann, *Die Amerbachkorrespondenz* (Basel: Verlag der Universitätsbibliothek, 1943), vol. 2, p. 408, line 24.

¹⁴⁵ F. Bierlaire, *La familia d'Erasmus* (Paris, J. Vrin, 1968), p. 64.

¹⁴⁶ G. E. Steitz, "Der Humanist Wilhelm Nesen," in: *Archiv für Frankfurts Geschichte und Kunst*, N. F., 1877, 6: 57.

¹⁴⁷ Epistola, 1407, line 101.

into two camps. It is safe to suppose that Erasmus was on Brissot's (and Hippocrates') side, although there is no written proof of this. However, Erasmus, in his letter to Andrew and Christopher Conritz¹⁴⁸ in 1530, made favorable reference to Georg Agricola's (1494-1555) *Bermannus*, first published by Froben in 1530, in which Agricola praised Brissot.¹⁴⁹

Martin Hunne (or Hunnus) was also introduced to Erasmus through a letter written by Conrad Mutianus in February of 1524.¹⁵⁰ Although Adam¹⁵¹ mentioned Hunne, we learn more details about him through Erasmus' correspondence. When he visited Erasmus in Basel in 1524, Hunne was professor of philosophy at Erfurt, where he may previously have studied medicine. Less than a year later,¹⁵² he turned his complete attention to medicine, and left Erfurt. The following year he received his M. D. degree at Padua. From Giovanni Manardi's letter written to the physician Andrea Turini (1473?-1543) in July 1531,¹⁵³ we know that, before settling at Graz as a physician, Hunne visited Manardi in Ferrara. Although Erasmus corresponded actively with Hunne for several years, no letter survived suggesting that Erasmus was Hunne's patient.

In 1524 another physician arrived from Italy to meet Erasmus. Following the German Hunne, who had traveled from Padua to Graz through Basel, a young Hungarian, on his way home from Padua with his recently conferred M. D., arrived in Basel. Kassai János Antal, better known as Johannes Antoninus Cassoviensis (ca. 1496-ca. 1543), was attracted to Erasmus' circle. During his four-month stay in the city, he became Erasmus' physician and healed his kidney stone ailment. Although Antoninus was invited to settle in Basel and establish a medical practice there, in the fall he returned to Buda. The thankful Erasmus dedicated his Galen translations to Antoninus, using the letter which had been written to Antoninus August 28, 1525.¹⁵⁴

This short personal contact was profitable for both of them. The young physician became an Erasmian humanist, and transplanted the Erasmian idea to Hungary and Poland. On the other hand Erasmus,

¹⁴⁸ Epistola, 2274, line 18.

¹⁴⁹ Georg Agricola, *Bermannus* (Basileae, in aedibus Frobenianis, 1530), pp. 65-66, lines 21-23.

¹⁵⁰ Epistola, 1425.

¹⁵¹ Melchior Adam, *Vitae Germanorum medicorum* (Francofurti ad Moenum, apud Joh. Maximilianum à Sande, 1706), p. 7.

¹⁵² Epistola, 1567.

¹⁵³ Giovanni Manardi (1462-1536), *Epistolarum medicinalium libri duodeviginti* (Basileae, [Johann Bebel] 1535), p. 302.

¹⁵⁴ Epistola, 1698, and see above, footnotes 13-15.

who was beginning to feel unsafe in Basel, oriented himself more and more toward central Europe, where the fire of the Reformation did not burn up the tranquility of souls. Antoninus backed Circius' invitation to Erasmus to move to Poland, but Erasmus did not want to leave the battle grounds now; he was only looking for spiritual and political backing from central and eastern Europe. There remain four letters written by Erasmus to Antoninus, and four by the latter to Erasmus.¹⁵⁵ After the Battle of Mohács (1526), a great part of Hungary was occupied by the Turks and Antoninus settled permanently in Poland. While working devotedly for Erasmus, he became the physician to Peter Tomiczki, Bishop of Cracow, and later of King Sigismund I. *De tuenda bona valetudine*, (Cracoviae, Hier. Vietar., 1545), his greatest medical work, generally discusses the health of man, including sections on physiology, diagnosis, diet, and general therapy.

One of the first Italian Erasmians, the physician Giovanni Manardi (or Meinardus, Monardus, Menardo; 1462-1536), was among the first Italians to rebel against Galen's authority. Manardi, a supporter of Brissot, was introduced to Erasmus by Coelius Calcagninus in 1525.¹⁵⁶ Manardi was a professor of medicine at Ferrara after he returned from Hungary, where he was physician to king Wladislaus II. No letter from Erasmus' nor any of Manardi's correspondence has survived, but letters written to or by third persons show that they were in contact for a decade. Erasmus read Manardi's *Epistolae medicinalis* in 1529¹⁵⁷ and Conrad Nyder visited Erasmus in 1534 with a commendatory letter from Manardi.¹⁵⁸ The news about Manardi's death on March 8, 1536, was sent to Erasmus in April 1536 by Johann Sinapius.¹⁵⁹

During the years 1524-1526, Georg Agricola (1494-1555), the former school principal of Zwickau and lecturer in philosophy at the University of Leipzig, spent some time at the universities of Bologna and Venice as he traveled in Italy. He probably also stopped at Padua where he got acquainted with Leonard Casembroot. Agricola, later to become the famous writer on mining, was introduced to Erasmus by Casembroot in his letter written from Padua in August 1525.¹⁶⁰ Casembroot reported that a friend of his—Agricola—was engaged in a revision of Galen.

¹⁵⁵ *Epistolae*, 1602, 1698, 1825, 2176 and 1660, 1810, 1916, 3137.

¹⁵⁶ *Epistola*, 1587, lines 288-295.

¹⁵⁷ *Epistola*, 2172, lines 90-93.

¹⁵⁸ *Epistola*, 2984.

¹⁵⁹ *Epistola*, 3113.

¹⁶⁰ *Epistola*, 1594, lines 105-108.

During this time Agricola must have finished his medical education because two years later he became the town physician at Joachimstal, a booming mining town in Bohemia. Here Agricola, whenever he was free from his medical duties, visited the mines, read about mining and became acquainted with the miners. One of them was Lorenz Berman, who became "Bermannus." Erasmus knew about the work under preparation from Peter Plateanus,¹⁶¹ a friend of Agricola's. Plateanus wrote a preface to the book and sent the work to Erasmus asking him to recommend it to Froben for publication. Agricola could then have used Erasmus' help concerning the publication of the work, which was published by Froben the next year, under the title: *Georgii Agricolae medici Bermannus, sive de re metallica*. Erasmus added a warm letter of approval to the beginning of the edition arranged by him.¹⁶² After the publication of *Bermannus*, an extensive correspondence developed between the two. Agricola seems to have been traveling from 1530 to 1533, and in 1533 he became the city physician of Chemnitz. In that year he published through Froben in Basel and Wechelus in Paris his *Libri quinque de mensuris & ponderibus*. The work was discussed with Erasmus as far back as 1531¹⁶³ and again in 1533.¹⁶⁴ The last surviving letter from Erasmus to Agricola, written in April 1534, was mostly an explanation of his controversy with Luther.¹⁶⁵

Erasmus wrote an unusually long letter in March 1526 to Francesco Cigalino (1489-ca. 1550), physician of Como.¹⁶⁶ Erasmus expressed his appreciation for Cigalino's interest in Holy Scriptures, and gave an accurate report on his translation of Luke's text and the words: "On earth peace, goodwill among men." The wording and length of the letter suggest that Cigalino was important for some reason to Erasmus, but Cigalino's name does not come up again in Erasmus' correspondence. Cigalino is credited in several works of medical interest by Ghilini.¹⁶⁷ However, no major library catalog lists his supposed Hippocrates and Galen editions or his *Dialogus contra astrologos*.

For medical history Erasmus' most publicized and most overempha-

¹⁶¹ Epistola, 2216.

¹⁶² Epistola, 2274.

¹⁶³ Epistola, 2529, lines 20-23.

¹⁶⁴ Epistolae, 2782, line 1: "librum tuum," and 2803, lines 39-43.

¹⁶⁵ Epistola, 2918.

¹⁶⁶ Epistola, 1680.

¹⁶⁷ Girolamo Ghilini, *Teatro d'huomini letterati* (Venetia, per li Guerigli, 1647), vol. 2, p. 88-89.

sized "friendship" was that with Paracelsus. Historians like to give credit to Erasmus for the appointment of Paracelsus in 1527 as "physicus et ordinarius Basiliensis." It is likely that Erasmus' good opinion of Paracelsus indirectly supported him, but apparently Paracelsus was helped more by his own already established fame and the politicking between the Protestant town council and the Catholic university in the appointment. Professor Debus¹⁶⁸ states that Paracelsus became personal physician to Erasmus. This seems to be an exaggeration. Apparently Paracelsus saw Erasmus no more than once. Paracelsus often visited Froben's house where he treated and healed Froben's foot. We may presume that on this one occasion Erasmus, a guest of Froben's and always ready for free medical advice, went downstairs out of curiosity when he heard that the famous doctor was there. The surprisingly orthodox diagnosis made by Paracelsus is well known in several English translations (and mistranslations) of Paracelsus' letter to Erasmus.¹⁶⁹ Erasmus' letter¹⁷⁰ to Paracelsus is evaluated by Allen as an answer to the diagnosis. But a reexamination of the text of the two undated letters by Murray (both letters written perhaps in March 1527)¹⁷¹ is convincing proof that Paracelsus' letter is the reply to Erasmus' inquiry written after their meeting (and Paracelsus' examination of Erasmus) at Froben's house. Outside of this letter, Paracelsus' name is not even once more mentioned in Erasmus' correspondence during the following nine years.

The medical knowledge of Joachim Martins (or Martinius) of Ghent was praised by Erasmus in his preface to Agricola's *Bermannus*. Martins was the translator of Galen's *De alimentorum facultatibus libri III*, published in 1530 in Paris by Simon de Colines. In September 1528, Erasmus thanked Martins for his collection of adages from Galen's works as well as for his notes on Erasmus' Galen translations.¹⁷² Martins lived mainly in Basel. In the summer of 1532, he visited Erasmus in Freiburg,¹⁷³ and then planned to visit Italy. Martins' name is often mentioned in Erasmus' letters written to Boniface Amerbach. After the death of Erasmus, Martins returned to the Netherlands where he died around 1540.

The famous Janus Cornarius (1500-1558), the great traveler of Europe,

¹⁶⁸ A. G. Debus, *The English Paracelsians* (London: Oldbourne, 1965), p. 16.

¹⁶⁹ Epistola, 1808.

¹⁷⁰ Epistola, 1809.

¹⁷¹ W. A. Murray, "Erasmus and Paracelsus." In: *Bibliothèque d'Humanisme et Renaissance*, 1958, 20: 560-564.

¹⁷² Epistola, 2049, lines 1-3; 18-22.

¹⁷³ Epistola, 2706.

was, like Erasmus, an ardent translator and editor of the classics. Cornarius was something of an admirer of Erasmus, but he discarded Erasmus' Galen translation and submitted his own for the new Froben Galen of 1549. Erasmus' letter dated August 9, 1529,¹⁷⁴ reached Cornarius either in Basel, where he was lecturing on the Greek medical writers, or in Zwickau, where he had already settled down as town physician. Erasmus praised Cornarius highly in the letter; the latter proudly quoted a sentence from it in the preface to his translation of the works of Hippocrates.¹⁷⁵

Johann Lotzer von Horb, a skillful physician to William III of Holstein, Bishop of Strasbourg from 1519 on, became acquainted with Erasmus, possibly in the spring of 1529. Erasmus' letter of March 8, 1529, to Lotzer¹⁷⁶ is concerned with current literary problems, and Lotzer's letter¹⁷⁷ of April 4, 1530, to Erasmus announces that Lotzer's son will come to study in Freiburg in order to be close to Erasmus. Lotzer was the author of *Ein nutzlichs Regimen* against the plague published in 1519 and again in 1521. Lotzer's name comes up once again in Erasmus' correspondence: Erasmus sent his greetings to Lotzer through Joannes Sinapius in a letter dated March 21, 1531.¹⁷⁸

The above letter, which is the last concerning Lotzer, is also the first mentioning Joannes Sinapius of Schweinfurt. In 1529, Sinapius was a professor of Greek in Wittenberg. In 1531 he went to Ferrara to obtain a medical degree under Manardi, to whom he had been introduced by Erasmus. In 1534 he was practicing physician¹⁷⁹ and in 1535 he became a professor of medicine at Ferrara, where he still was in 1545. From 1548 he was the physician of the bishops of Würzburg, where he died in 1561. The connection between Sinapius and Erasmus was close, as seen in their correspondence up to Erasmus' death. Their letters dealt mostly with typical "newspaper news" of those days, were illustrated with the most important literary happenings, and chatted about two physicians not previously mentioned: Joannes Angelus Odonus and Antonius Luceus.¹⁸⁰ Sinapius' last letter to Erasmus, dated April 3, 1536, from Ferrara, reports the death of Giovanni Manardi.¹⁸¹

¹⁷⁴ Epistola, 2204.

¹⁷⁵ Hippocrates, *Opera* (Parisiis. apud Carolum Guillard, 1546), p. [6], lines 5-11.

¹⁷⁶ Epistola, 2116.

¹⁷⁷ Epistola, 2306.

¹⁷⁸ Epistola, 2461, line 15.

¹⁷⁹ Epistola, 3002, lines 982-988.

¹⁸⁰ Epistolae, 2956, 3113, lines 14-17.

¹⁸¹ Epistola, 3113, lines 1-10.

Erasmus enjoyed not only the friendship of humanist physicians but also the hatred of some of them. Because of his dialogue *Ciceronianus*, published in 1528, Erasmus had aroused the violent loathing of the Ciceronians, among them Julius Caesar Scaliger (1484-1558), physician to De la Rovère, Bishop of Agen. In his work, Erasmus ridiculed those who admired Cicero to such an extent that they refused to use any Latin word that Cicero had not used in his works. Scaliger, who felt personally insulted by the "barbarian" Erasmus, declared Erasmus an enemy of Cicero. Scaliger felt this was the time to gain fame, and in 1529 he wrote his first oration against Erasmus, which he could not get published until 1531. The name of Scaliger had been unknown to Erasmus, but he was informed by Rabelais, in a letter dated November 30, 1532, that his assailant was a resident physician at Agen.¹⁸² Scaliger, however, waited in vain for Erasmus' answer. Instead of answering Scaliger's violent work, Erasmus, on April 18, 1535, wrote to his friends Peter Merbelius and Giovanni Baptista Laurentia defending himself against the charges made by Scaliger and Étienne Dolet that he was an enemy of Cicero.¹⁸³ Erasmus also suggested that the oration, full of abuse and lies, could not have been written by Scaliger. The addressees sent Erasmus' letter without any comment to Scaliger, who then wrote his even more furious and more violent second oration against Erasmus. But this was printed only after Erasmus' death.

Heinrich Cornelius Agrippa von Nettesheim (1486-1535) was a philosopher, scientist, soldier, and physician, a man who, as Erasmus had tried to do, stood outside the two hostile camps of Rome and the Reformation. Agrippa's correspondence,¹⁸⁴ which is the main source of his connection with Erasmus, shows his interest in the new publications of Erasmus and Luther alike. However, Agrippa accepted only those new ideas which were also acceptable to Rome. Otherwise he had the temper of Paracelsus, and, in religious matters, fought in the spirit of independence. In 1524 he became the physician of Louise of Savoy, the queen mother of France. In 1529 he was the physician of Margaret, regent of the Netherlands. He published his *De incertitudine & vanitate scientiarum & artium* in 1530. In this work, which may be compared with Erasmus' *Praise of Folly*, Agrippa not only attacked learning, but

¹⁸² Epistola, 2743, lines 20-29.

¹⁸³ Epistola, 3005.

¹⁸⁴ "Epistolarum liber VI & VII." In his *Opera* (Lugduni, per Beringos fratres [1600?]), vol. II.

also kingship, which offended the Emperor; as in the *Folly*, medicine, too, was brought up. But instead of treating medicine as a whole, he attacked snobbish, uneducated patients and the businessman-physician who catered to them: "Those are the most reputed physicians, who are dressed in ridiculous costumes, covered with jewels and rings, also who are from a country not well known, have different religions, like Jewish or Mohammedan, and who can well propagate and praise their medicines and cures."¹⁸⁵ Agrippa sent the work to Erasmus for an opinion, and he liked it.¹⁸⁶

Anselm Ephorin from Silesia (ca. 1505-1568) visited Erasmus in Freiburg. He stayed in Erasmus' house from April until September 1531. Erasmus was thrilled to have this new admirer Ephorin around and found him intelligent and helpful. Erasmus praised Ephorin especially in his letters written to Severin Boner¹⁸⁷ and to Simon Grynaeus.¹⁸⁸ From Freiburg, Ephorin moved to Basel, where he wrote four letters to Erasmus in 1531 and 1532.¹⁸⁹ A final letter was written from Rome, dated August 16, 1535.¹⁹⁰ Ephorin was a great admirer of Erasmus long before they met in Freiburg. He got his education in Cracow, where he helped to publish two works by Erasmus and several works of Pliny. After his stay in Freiburg and Basel, he went to Padua where he received his M. D. in 1534. After returning to Cracow, he became the city physician and member of the city council. He was also the author of medical works: *De utilitate artis medicae* (1538), *Medicinale compendium ad. . . senatum regiae urbis Cracoviensis* (1542) and *Remedium contra pestem*. No letter from Erasmus to Ephorin has survived; however, his interest in Ephorin stayed warm till the end of Erasmus' life. The reason was probably not medical, but political: Erasmus' interest at the end of his life in the solid Catholic East, which we already mentioned in connection with Johannes Antoninus. Erasmus' letter addressed to Gilbert Cognatus, written in Basel and dated March 11, 1536, mentioned Ephorin for the last time.¹⁹¹

¹⁸⁵ *De incertitudine & vanitate scientiarum & artium* [Antverpiae, Joan. Grapheus, 1530], signature [i4^r].

¹⁸⁶ Epistola, 2544. More background on Agrippa and Erasmus can be found in C. G. Nauert, Jr., *Agrippa and the Crisis of Renaissance Thought*. (Urbana: Univ. of Illinois Press, 1965).

¹⁸⁷ Epistola, 2533, lines 1-12.

¹⁸⁸ Epistola, 2535.

¹⁸⁹ Epistolae, 2539, 2554, 2559 and 2606.

¹⁹⁰ Epistola, 3035.

¹⁹¹ Epistola, 3104, lines 59-60.

The letter of François Rabelais (ca. 1490-1553?) already mentioned, dated in Lyons, November 30, 1532,¹⁹² is the only suggestion that these giants of Humanism may have had any personal connection. The letter was addressed to "S. P. a Christo Jesu servatore." Its address sheet is missing, and the scholarship of several researchers was needed to prove that the addressee really was Erasmus. Since Erasmus probably never answered the letter, it has not yet been proven that he really received it. It is a great pity that the two men, whose vision on true medicine was so close, presumably never met. But the young Rabelais, a priest and a physician, a Galenist, a lecturer on Hippocrates at Montpellier and Lyons, eagerly read the works of Erasmus and became one of the greatest Erasmians. The stamp of Erasmus is on Rabelais' thinking, style and, of course, on his works, especially *Gargantua*. Rabelais copied three whole paragraphs from the *Adagia*, and much from *Colloquia*, *Institutio* and *Paraphrases*.¹⁹³

The only letter from Erasmus to Johann Agricola (or Joannes Agricola Ammonius, or Johann Peurle, 1496-1570) is dated from Freiburg May 3, 1533.¹⁹⁴ The letter was printed the following year at the beginning of Agricola's *Scholia copiosa in therapeuticam methodum, id est, Absolutissimam Claudii Galeni . . . curandi artem*, published by Philipp Ulhard in Augsburg. The letter is mainly a critical treatise of various Galenic texts. Agricola was a professor of Greek in 1515 and became professor of medicine in Ingolstadt in 1531. The author of several medical works, he attributed the name *morbis comitialis* to the tendency of epileptics to suffer attacks at crowded places. That Erasmus was acquainted with this explanation of the name shows Erasmus' knowledge of medical terms.¹⁹⁵

Antonius Luceus Lusitanus Eborensis, a Portuguese pupil of Pierre Brissot's (see footnotes 147-9) edited and published posthumously Brissot's *Apologetica disceptatio*. Luceus' epistola dedicatoria to Brissot's work was dated 1525 in both the 1525 Paris and the 1539 Venice editions of the work. Luceus' name first came up in Erasmus' correspondence in 1534, in a letter addressed to Sinapius.¹⁹⁶ In a letter dated April 3, 1536, Sinapius passed on Luceus' greetings to Erasmus.¹⁹⁷ But presumably Erasmus had known Luceus much earlier through Brissot.

¹⁹² Epistola, 2743.

¹⁹³ W. F. Smith, *Rabelais in His Writings* (Cambridge: at the University Press, 1918).

¹⁹⁴ Epistola, 2803.

¹⁹⁵ Owsei Temkin, *The Falling Sickness*, 2nd ed. rev. (Baltimore and London: The Johns Hopkins Press, 1971), p. 8.

¹⁹⁶ Epistola, 2956, line 19.

¹⁹⁷ Epistola, 3113, line 14.

The only sources concerning the physician Conrad Nyder (or Nider) are two letters from Erasmus' correspondence. The first letter was written by Erasmus to John of Metzenhausen, Archbishop and Elector of Trier (September 27, 1534),¹⁹⁸ in which Erasmus recommended Nyder to Metzenhausen. The second letter came from Nyder to Erasmus, and was dated December 20, 1534, in Coblenz. From Erasmus' letter it may be assumed that Nyder got his medical degree in Ferrara, since Erasmus mentions that Nyder came to see him with a commendatory letter from Manardo. Nyder's letter from Coblenz may suggest that he was practicing medicine in that city.¹⁹⁹

The Oddone (or Odonus) brothers both followed their father's profession and studied medicine at Bologna. The older brother, Giovanni Angelo, was introduced to Erasmus by Sinapius. Giovanni Angelo wrote to Erasmus in March 1535, introducing his younger brother Cesare.²⁰⁰ Giovanni Angelo visited Erasmus around Easter, 1535, in Freiburg. After the visit he returned to Strasbourg. It is unclear what his profession in Strasbourg was. Cesare, the well-known physician listed by Toppi and Tiraboschi, was the author of "*De urinis libellus*" (published in 1658 in Heinrich Martini's *Anatomia urinae Galeno-spagyrica*) and editor of some works of Aristotle, Theophrastus, and others. He practiced medicine in Bologna and died in 1571.

In Erasmus' controversy with the Ciceronians, another medical writer, in addition to Scaliger and Dolet, was involved. His name never appeared in Erasmus' correspondence, but Erasmus knew him and cited one of his works, the *Cicero relegatus & Cicero revocatus, dialogi festivissimi*, published in 1534 in Leyden and Venice, under the initials A. H. The author was Ortensio Landi (ca. 1512-ca. 1553) or Hortensius Landus, who used the pseudonyms of Philalethes Utopiensis, Philalethes Politopiensis, Anonimo di Utopia, and Suisnetrohtabedul. He also liked to be published anonymously. He is the author of the *Una breve prattica di medicina* published anonymously in 1552 or 1553, and a dialogue between Hortensius and Marcellus medicus titled *Brevis elucubratio . . . de his morbis, a quibus humana corpora infestari . . . solita sunt*, published in 1553 without any of his names. He was on the side of the Ciceronians, as were many of the Italians and Frenchmen involved in the controversy against the "northern barbarians." Landi was in Lyons in 1534, where he introduced Oddone and others who knew Erasmus to Dolet. Landi's

¹⁹⁸ Epistola, 2968.

¹⁹⁹ Epistola, 2984, lines 15-20, and 25-28.

²⁰⁰ Epistola, 3002, lines 863-866.

Cicero relegatus was published when Erasmus' fame was at its lowest. He was an old man weary from increasing controversies and fights, and his best friends were dead. In his letter to Damian a Goes, written in Freiburg on May 21, 1535, he depressingly summarized the thickening clouds on the horizon. He cited *Cicero relegatus* (which was a relatively calm attack on him) as one of the newest proofs that the world no longer understood him.²⁰¹

In June 1535, in spite of his real wish to spend his last years in the Low Countries, Erasmus moved from Freiburg to Basel. Much work was waiting for him in Froben's printing office; he had to recheck the *Ecclesiastes*, which was published that same year, and he helped to reprint the *Adagia*, which came out the next year. Erasmus stayed with Johann Froben's son Hieronymus in his house *Zum Luft*.²⁰² The religious storms were over in Basel; Erasmus felt safe there but he did not intend to stay. For years he had toyed with the idea of returning to the Low Countries. Many of his friends had urged him to do so. In a letter dated June 13, 1533, the Regent, Mary of Hungary, urged Erasmus to return to the Netherlands.²⁰³ But Erasmus, clinging to the illusion that Burgundy wine would help him continue his work, became weaker day by day. After the summer of 1535, he was mostly bedridden. In February 1536, he made a new will, yet in the spring of 1536 he was still hoping to return to Burgundy. On June 28, he wrote to Conrad Goclenius that, although he was living in Basel with his most sincere friends, the likes of whom he did not have in Freiburg, he would prefer to end his life elsewhere, and he wished Brabant were closer. This is Erasmus' last surviving letter.²⁰⁴ He died in Basel on the night of the 11th of July.

In his later years, Erasmus was less talkative about his health in his letters. There is no clue as to who his regular physician was during the almost 11 months that he spent in Basel before his death, and no source seems to name the physician attending Erasmus at the hour of his death. But we may suspect that there was a physician present during his last days, and that this physician was Heinrich Stromer von Auerbach (1482-1542).

Erasmus' last days and his death are described by a friend, Beatus Rhenanus, in his epistola dedicatoria to Emperor Charles V in Erasmus'

²⁰¹ Epistola, 3019.

²⁰² Today the corner of Bäumleingasse and Luftgässlein.

²⁰³ Epistola, 2820.

²⁰⁴ Epistola, 3130, lines 26-29.

Opera omnia.²⁰⁵ During the winter Erasmus suffered from a heavy attack of gout which was succeeded in the summer by a painful, continuous dysentery. Heinrich Stromer confirms Rhenanus' description of Erasmus' illness and death in a letter written immediately after the burial.²⁰⁶ Erasmus' friendship with Stromer originated in 1517. Stromer had entered the University of Leipzig around 1497. In 1508 he was rector of the University, and in 1516 professor of pathology, publishing an *Observationes* against the pest. At the time that he wrote his first letter (April 30, 1517)²⁰⁷ to Erasmus, he was in the service of Albert, Archbishop of Mainz. Erasmus answered on August 24.²⁰⁸ Thus began their correspondence and intimate friendship, which lasted until the last minute of Erasmus' life. It must have been comforting to Erasmus that Stromer, an old, good friend who was also a physician, helped him wait for the end.

Stefan Zweig,²⁰⁹ one of Erasmus' biographers, hopelessly lamented in 1934 that Erasmus' works "sleep undisturbed upon the shelves of libraries; hardly a single of them . . . has any message to our epoch." During the past three decades the picture has been completely reversed.²¹⁰ Two new editions of Erasmus' collected works which are under way,²¹¹ one in English and the other in Latin, newly edited, with English commentaries, offer new and broader ways for research. The present paper is not intended to be a comprehensive work on Erasmus and medicine. Many of Erasmus' works, especially those close to psychiatry, have never been touched by medical researchers.²¹² Some of C. G.

²⁰⁵ *Opera*, vol. 1, p. [13].

²⁰⁶ A. H. Horawitz, "Erasmiana I." In: *Akademie der Wissenschaften, Vienna. Philosophisch-historische Classe. Sitzungsberichte*. Wien, 1878. vol. 95, p. 608-609.

²⁰⁷ Epistola, 578.

²⁰⁸ Epistola, 631.

²⁰⁹ Zweig, op. cit. (n. 4 above), p. 9.

²¹⁰ In the Folger Shakespeare Library, where most of the sources for this paper were read, scholars have to take turns in using original editions and books on Erasmus. The author must express his gratitude to Mrs. Sandy R. Powers and her staff for their sympathy and understanding in the struggle to use the limited time available for this study to its maximum advantage.

²¹¹ *Erasmi opera omnia*. Amsterdam, North-Holland Publishing Co. I., 1969-. The third edition of Erasmus' works in Latin, newly edited, with English annotations. *The collected works of Erasmus*. University of Toronto Press. A projected publication in an edition of 30-35 volumes which will contain only English text. The first three volumes will be published in 1973, and about three volumes in each year after 1973.

²¹² H. Schüling, *Bibliographie der Psychologischen Literatur des 16. Jahrhunderts* (Hildesheim: Georg Olm, 1967), lists 16 editions of Erasmus' *De libero arbitrio* and *Hyperaspites diatribae*. "De varia rerum omnis generis sympathia & antipathia dialogus"

Jung's works, chiefly his conception of the introverted and extroverted vision of the world,^{21a} may help researchers to understand the psychological aspects of Erasmus' stand on many issues, such as free will, and his divergences and conflicts of opinion with Luther and other contemporaries.

was first published in the 1531 Basel edition of the *Colloquies*. The *De libero arbitrio* was translated and edited by E. G. Rupp: "Luther and Erasmus: free will and salvation." *The Library of Christian Classics*. vol. XVII, Philadelphia, The Westminster Press, [1969]. The *De sympathia* was published in English translated by C. R. Thompson, in *The colloquies of Erasmus* (University of Chicago Press [1965]).

^{21a} C. G. Jung, *Psychological Types; or, The Psychology of Individuation* (London: Paul, Trench, Trubner, 1923).

THE MAKING OF AN ECLECTIC PHYSICIAN: JOSEPH
M. McELHINNEY AND THE ECLECTIC MEDICAL
INSTITUTE OF CINCINNATI *

RONALD L. NUMBERS

Among the numerous medical sects that sprang up in antebellum America, one claimed to offer the best of all systems. These self-styled "eclectics," repelled alike by the heroic practices of the regulars and by the dogmatism of rival reformers, proposed to live solely by the motto "Prove all things and hold fast that which is good." Their democratic and empirical approach to medicine accorded with the spirit of the times, and by the close of the 19th century they claimed—without great exaggeration—to represent one-tenth of the medical profession.¹ Despite this numerical strength, however, we still know little about the training and practice of the eclectic physicians. Historians of American medical education have generally been less than sympathetic toward sectarian practitioners and have judged rather harshly the quality of education

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¹ Near the end of the century John K. Scudder, secretary of the faculty of the Eclectic Medical Institute, estimated the strengths of the various schools as follows: "Old-School, 73,028; Eclectic, 9,703; Homeopathic, 8,640; Physio-Medical, 1,553"; cited in Alexander Wilder, *History of Medicine* (New Sharon, Maine: New England Publishing Co., 1901), p. 761. It should not be necessary to point out, however, that 19th-century medical statistics are notoriously unreliable. Two examples should suffice to illustrate this fact. In 1858 a New York physician fixed the number of eclectics in the entire United States at only 800, while in the previous thirteen years the Eclectic Medical Institute alone claimed to have enrolled over three times that many students and to have graduated almost 800. See Joseph F. Kett, *The Formation of the American Medical Profession: The Role of Institutions, 1780-1860* (New Haven: Yale University Press, 1968), p. 185, for the 1858 survey; and H. W. Felter, *History of the Eclectic Medical Institute of Cincinnati* (Cincinnati: Printed for the Alumni Association of the Eclectic Institute, 1902), p. 38, for the number of matriculants and graduates of the Institute through 1855. In 1874 Butler's national medical directory listed only 300 eclectic physicians from Ohio, but just one year earlier the *Eclectic Medical Journal* reported having 347 subscribers in that state, and many eclectics presumably did not subscribe. See Frederick C. Waite, "Ohio physicians in the nineteenth century: a statistical study, part II," *Ohio State Med. J.*, 1950, 46: 893; and "Number of eclectic physicians," *Eclectic Med. J.*, 1873, 33: 388.

found in the irregular schools.² Perhaps the majority of the sectarian colleges were inferior to the average regular school, but there were significant exceptions, like the Eclectic Medical Institution of Cincinnati, the alma mater of well over half of all eclectic physicians in the United States.³

Eclectics commonly traced their lineage back to Wooster Beach and a coterie of other regularly trained young physicians who organized a society in 1829 to promote the cause of medical reform, particularly along botanical lines.⁴ It has frequently been suggested that the eclectics owed their origin to a schism among the Thomsonians in the 1820s, with the eclectics drawing off the better-educated elements.⁵ Certainly the eclectics had much in common with the Thomsonians, but it would seem to be more accurate to view the former as founders of a parallel, but basically independent, botanic movement. This is the way they themselves recalled their history. With perhaps a little hyperbole they claimed that their system originated "without the least reference to other Reform Systems, 'and for the most part, without even the knowledge that such a system as the Thomsonian, or such a being as Samuel Thomson was in existence.'"⁶

The eclectics saw their movement as "the protest of American common sense and experience" against the dogmatic and antiquated approach of Old-School Hunkerism, as they fondly called the regular practice. They claimed to adopt all that was good and to reject all that was bad. In practice this meant that they generally substituted indigenous botanical remedies for calomel, bleeding, and other heroic treatments.⁷ But their

² See, for example, William Frederick Norwood, *Medical Education in the United States Before the Civil War* (Philadelphia: University of Pennsylvania Press, 1944), p. 421; and Frederick C. Waite, "Medical education in Ohio," *Ohio State Med. J.*, 1953, 49: 626. According to Waite, "the best medical instruction in the state [of Ohio] was in the regular medical colleges, the second best in the homeopathic institutions, followed by somewhat inferior instructions in the eclectic medical colleges, and by grossly inferior teaching in the botanic and physiomedical institutions."

³ J. M. Scudder, "A brief history of eclectic medicine," *Eclectic Med. J.*, 1879, 39: 302.

⁴ On the early history of eclecticism, see Felter, *op. cit.*, pp. 5-7; and Wilder, *op. cit.*, pp. 434-39, 483.

⁵ See Frederick C. Waite, "Thomsonianism in Ohio," *Ohio State Archaeological & Hist. Quart.*, 190, 49: 322-31; and Alex Berman, "The Thomsonian movement and its relation to American pharmacy and medicine," *Bull. Hist. Med.*, 1951, 25: 428.

⁶ Wilder, *op. cit.*, pp. 515-16. See also G. W. L. Bickley, "History of the Eclectic Medical Institute of Cincinnati, and its ethical peculiarities: chapter II," *Eclectic Med. J.*, 1857, 16: 59-60.

⁷ "What is the American eclectic system of medicine?" *Eclectic Med. J.*, 1954, 13:

claim to be eclectic was not merely rhetorical. At one time or another they borrowed from just about every system available, including homeopathy, hydropathy, phrenology—even allopathy. The Eclectic Medical Institute at one point went so far in the direction of medical ecumenicalism as to appoint a professor of homeopathic medicine. The experiment did not last long, but the Cincinnati school does get credit for awarding the first homeopathic degrees in the West.⁸

During the late 1820s Beach had founded a Reform Medical College in New York City, and by 1830 the eclectics were ready to push westward in the direction of the Ohio Valley. The trustees of a dormant college in Worthington, Ohio, offered them the use of a charter and a building, and in December 1830 the Reformed Medical College of Ohio opened its doors. Its president, Thomas Vaughan Morrow, was a young Kentuckian not yet out of his twenties who had received both regular and reformed training. All went moderately well until the autumn of 1839, when the college obtained the body of a woman mistakenly buried in potter's field, the traditional source of the school's anatomical material. To avoid open warfare with the local citizenry, Morrow judiciously offered to shut down the college and move out of town.⁹

Morrow's dreams of a great eclectic institution in the West did not die with the Worthington fiasco. Before long he had relocated in Cincinnati and with the help of some Worthington alumni had opened the Reformed Medical School of Cincinnati. In 1845, after a bitter and sometimes foolish senate battle, the state legislature granted Morrow a charter establishing the Eclectic Medical Institute of Cincinnati.¹⁰ Under his guidance the school quickly blossomed into one of the largest in the West, and by the mid-1850s the Institute could pride itself on having the greatest enrollment of any medical college outside Philadelphia

360; Lorenzo E. Jones, "Introductory lecture," *ibid.*, 1851, 10: 95; Robert S. Newton, "Calomel and bleeding," *ibid.*, 1852, 11: 528.

⁸ J. R. Buchanan, "Introductory lecture," *Eclectic Med. J.*, 1851, 10: 537-64; William Paine, *An Epitome of the American Eclectic Practice of Medicine*... (Philadelphia: John Gladding, 1859), p. 8. On the experiment with homeopathy, see Felter, *op. cit.* (n. 1 above), pp. 25-30; and Lucy Stone Hertzog, "The rise of homeopathy," *Ohio State Archaeological & Hist. Quart.*, 1940, 49: 341.

⁹ Felter, *op. cit.*, pp. 9-19. The term "eclectic" was not widely adopted by Beach's followers until the 1840s. Prior to that time they had used various labels including "botanic," "reformed," "American," and "Beachite."

¹⁰ *Ibid.*, pp. 19-21; Wilder, *op. cit.* (n.1 above), p. 545. One orthodox physician reportedly informed the senators that "Medical science does not need, nor is it susceptible of further improvement, or reform."

and New York. The faculty was housed in a new four-story building near the heart of the city, and their monthly publication, *The Eclectic Medical Journal*, far excelled the regular journals of Ohio.¹¹

It was during this flourishing period in the Institute's history when Joseph M. McElhinney (sometimes McElHinney) began his training as an eclectic physician. At the mature age of thirty McElhinney abandoned his career as a small-town teacher and handyman in southeastern Ohio, left his wife and three children with relatives, and sailed down the river to seek a medical education in Cincinnati at the Eclectic Medical Institute. Each evening he carefully noted the day's events, and today his diary provides a fascinating and informative record of life at the Institute.¹²

McElhinney arrived in Cincinnati on the 2nd of October, 1854, carrying his trunk, carpet sack, pistol, and books. In his library were works on hydropathy, anatomy and physiology, Jones and Morrow's *Practice of Medicine* (an eclectic text), and Tom Brown's *Jest-Book*. Apparently his arrival was uneventful; at least he does not mention having encountered any of the runners the Institute's enemies were sure were sent to the docks to lure students away from other schools. By noon he had found a reasonable place to board for \$2.25 a week, and later in the day he paid his first visit to the Eclectic Medical Institute.¹³

In the fall of 1854 the faculty of the Institute was composed of seven professors and a demonstrator of anatomy. Although half of these instructors were graduates of the Institute, the quality of the teaching staff was well above the average found in pre-Civil War medical schools. Four of the professors achieved sufficient distinction during their lifetimes to be included in the *Dictionary of American Biography*.¹⁴ Joseph Rodes Buchanan, the controversial apostle of phrenology and mesmerism whose

¹¹ "Eclectic Medical Institute: Eleventh Annual Announcement," *Eclectic Med. J.*, 1855, 15: 393. On the quality of the *Eclectic Med. J.*, see Otto Juettner, *Daniel Drake and His Followers* (Cincinnati: Harvey Publishing Co., 1909), p. 362.

¹² Unfortunately the diaries are not complete; the extant volumes are now in the possession of the Vernier Radcliffe Memorial Library, Loma Linda University.

¹³ McElhinney Diary, vol. 13 (August-October, 1854); Alva Curtis, *A Fair Examination and Criticism of All the Medical Systems in Vogue* (Cincinnati: Privately printed for the author, 1855), p. 127. Curtis was founder of the Botanico-Medical College of Ohio.

¹⁴ "Tenth Annual Announcement of the Eclectic Medical Institute," *Eclectic Med. J.*, 1854, 13: 364-78. No fewer than ten of the Institute's faculty during the late 1840s and 1850s are included in the *DAB*: Wooster Beach, J. R. Buchanan, J. W. Hoyt, John King, T. V. Morrow, Robert S. Newton, W. B. Powell, J. M. Scudder, J. B. Stallo, and Daniel Vaughn.

Journal of Man had drawn McElhinney to the Institute, was dean of the faculty.¹⁵ Robert S. Newton, a popular eclectic surgeon "credited with having originated the circular incision for removal of the breast," served as professor of medical practice and pathology. Other prominent members of the faculty included John King, one of the most respected pharmacologists in the West, and J. W. Hoyt, who later went on to become territorial governor of Wyoming and the first president of that state's university. Hoyt occupied the Institute's chair of chemistry, which had a particularly distinguished succession of occupants during the 1850s: J. B. Stallo, the brilliant jurist and philosopher of science, Daniel Vaughn, frequent contributor to the leading British and American scientific journals, and John Milton Sanders, who had worked in Faraday's laboratory at the Royal Institution of Great Britain.¹⁶

The physical facilities of the Institute were also superior to those possessed by many medical schools in the mid-19th century. The four-story brick building housing the Institute was designed specifically for medical instruction. One floor was a large lecture hall, another was devoted almost entirely to compartments for anatomical dissection, and the uppermost story was an amphitheater for the demonstration of surgical operations and obstetric manipulations. It was estimated that there were accommodations for approximately 400 students, but even in its best years the Institute never saw more than about half that number at one time.¹⁷ Still, it was one of the largest medical colleges in America,

¹⁵ Felter includes biographical sketches of all faculty members through the 19th century. As Felter points out, Buchanan distinguished himself in many areas, "but attained no eminence as a practitioner of medicine," *op. cit.* (n. 1 above), p. 98. For recent discussions of Buchanan's many-faceted life, see Madge E. Pickard and R. Carlyle Buley, *The Midwest Pioneer: His Ills, Cures, and Doctors* (New York: Henry Schuman, 1946), pp. 227-29; John D. Davies, *Phrenology: Fad and Science. A 19th-Century American Crusade* (New Haven: Yale University Press, 1955), pp. 131-32; and Kett, *op. cit.* (n. 1 above), pp. 147-49.

¹⁶ On Newton's reputation as a surgeon, see the *DAB*, XIII, 475-76. According to Juettner, *op. cit.* (n. 11 above), p. 373, King "was one of the really eminent medical men that spent their lives in and for the benefit of people in this part of our country. That he, together with Wm. S. Merrell, was the greatest analytical pharmacologist in the history of medicine in Cincinnati, has never been disputed." For recent appraisals of Stallo's contributions to the philosophy of science, see Stillman Drake, "J. B. Stallo and the critique of classical physics," in *Men and Movements in the History of Science*, ed. Herbert M. Evans (Seattle: University of Washington Press, 1959), pp. 22-37; and Percy W. Bridgman's introduction to the reprint of Stallo's *Concepts and Theories of Modern Physics* (Cambridge: Harvard University Press, 1960).

¹⁷ J. R. Buchanan, "Improvement in the Institute," *Eclectic Med. J.*, 1853, 12: 411-13; "Medical schools in Cincinnati," *ibid.*, 1857, 16: 141-43.

graduating well over one-fourth of all physicians educated in Ohio during the 1850s.¹⁸ The winter session of 1854-55, one of the Institute's most prosperous terms, was attended by McElhinney and 196 other students, sixteen of whom were women.¹⁹ While many regulars were still reacting in feigned shock to the presence of "hoops" in the classroom, eclectics were out actively recruiting female students. As one eclectic cogently argued, "If the medical profession is indelicate for a woman, it is much more so for a man."²⁰

During his first two weeks in Cincinnati McElhinney attended the free preliminary lectures customarily offered by the Eclectic Medical Institute. Here he received practical instruction on personal hygiene, anatomy and physiology, diseases of women and children, the treatment of cancer, and the extraction of teeth, a duty most physicians were still expected to perform. He listened as Buchanan expounded on the struggle between our animal and spiritual natures and on the great influence of the pelvic organs, and sat through a recitation of "the errors and folly of the medical profession." For variety, one Saturday afternoon the professor of materia medica and medical botany, C. H. Cleaveland, took the students to a local botanical exhibition and showed them "the appearance of the different kinds of medical plants and flowers." When McElhinney tired of the Institute's preliminary fare, he would stroll over to the American Medical College, where former Institute teachers were extolling the virtues of brandy—"the most valuable medicine in the world,

¹⁸ Waite, "Ohio physicians in the nineteenth century," p. 894, lists 2,478 degrees conferred by all the medical colleges in Ohio during the 1850s. According to Felter *op. cit.* (n. 1 above), p. 146, the Eclectic Medical Institute awarded 683 of these degrees. During the early 1850s the Institute repeatedly claimed to be "one of the five leading medical schools of the Union and the largest in the West"; see the "Annual Announcement of the Eclectic Medical Institution of Cincinnati, for the Session of 1853-4," *Eclectic Med. J.*, 1853, 12: 337. The four larger schools were probably the College of Physicians and Surgeons (New York), the University of the City of New York, the University of Pennsylvania, and Jefferson Medical College (Philadelphia). See John S. Billings, "Literature and institutions," in *A Century of American Medicine, 1776-1876* (Brinklow Md.: Old Hickory Bookshop, 1962; first published in 1876), pp. 355-59, for statistics on regular graduates through the spring of 1876.

¹⁹ "Commencement of Eclectic Medical Institute," *Eclectic Med. J.*, 1855, 14: 105.

²⁰ "Female physicians," *College J. of Med. Sci.*, 1857, 2: 474. See also Richard Harrison Shryock, *Medicine in America: Historical Essays* (Baltimore: Johns Hopkins Press, 1966), p. 188; and Kett, *op. cit.* (n. 1 above), p. 120. Following the split of the Institute's faculty in 1856, women were no longer welcomed at the Institute. For a classic statement of male chauvinism, see G. W. L. Bickley, "Female medical education," *Eclectic Med. J.*, 1857, 16: 116-20. The rival Eclectic College of Medicine, later set up by Buchanan and Cleaveland, did continue to train women as eclectic physicians.

water excepted"—or attempting "to make an eloquent harangue on the anatomy of the eye," which, McElhinney wryly noted, "was rather too dry a subject to bring much eloquence out of."²¹

Prior to the opening of the regular winter session McElhinney visited the treasurer's office to pay his fees and pick up his class tickets. In the early days of the Institute tuition had usually run about \$65 per session, but since the fall of 1852 the faculty had adopted a "free" tuition plan. The true motives behind this move are not at all clear. It seems, however, that a genuine desire to provide low-cost medical education was rather closely associated with the less altruistic goal of attracting larger numbers of students and thereby increasing faculty income from private lectures and the sale of books. Though the plan never fulfilled expectations, it continued in effect for several years, allowing McElhinney to attend the entire term for a nominal fee of \$25: \$15 for matriculation, \$5 for the Institute building fund, and \$5 for a clinical ticket.²²

Since McElhinney had never served an apprenticeship with a practicing physician, a professed requirement for graduation in nearly all schools, he was unable to list a preceptor in the Institute's matriculation book. Instead, he merely inserted the name "E. M. Institute."²³ Most 19th-century medical colleges were proprietary in nature and consequently tended to worry little about admission requirements and other such matters. Until well after the Civil War no medical college in Ohio demanded any premedical education, and the dean of the Eclectic Medical Institute publicly proclaimed that no intelligent young man should let lack of preparation prevent him from entering medical school.²⁴ Given these conditions, it seems safe to assume that the widely-read McElhinney was at least as well prepared for the formal study of medicine as most of his classmates.

²¹ McElhinney Diary, vol. 13.

²² *Ibid.*, "Annual Announcement of the Eclectic Medical Institution of Cincinnati, for the Session of 1853-4," pp. 340-41; "Tenth Annual Announcement of the Eclectic Medical Institute," p. 378; G. W. L. Bickley, "Medical teaching," *Eclectic Med. J.*, 1857, 16: 18-19; "College fees—high and low," *ibid.*, 1860, 19: 624-25.

²³ Matriculation Book of the Eclectic Medical Institute, 1853-1900 (Lloyd Library, Cincinnati, Ohio). The Lloyd Library now houses both the library and the official records of the Eclectic Medical Institute. I am indebted to Mrs. Corinne Miller Simons, librarian, for her assistance in locating McElhinney's records.

²⁴ J. R. Buchanan (chairman), "Address to the Eclectic Physicians of the State of Ohio, by the Committee of Eclectic State Association," *Eclectic Med. J.*, 1853, 12: 55. On the lack of premedical requirements, see Waite, "Medical Education in Ohio," p. 625.

On Monday morning, October 16, McElhinney attended the opening class of the regular term, which was to continue six days a week for the next sixteen weeks. Most days were divided into six hour-long periods. On a typical Monday, for example, McElhinney sat through four morning lectures on medical botany, physiology, surgery, and anatomy, and then returned in the afternoon for two more sessions on pathology and obstetrics.²⁵ Most of what he heard probably did not differ substantially from what he would have heard in any regular medical college. As Dean Buchanan pointed out to the students in his traditional introductory lecture, insofar as medicine is a science, all physicians learn the same principles from the same textbooks. It was in the practice of medicine, particularly as it related to *materia medica*, that the eclectics went their separate way. Instead of learning how to administer the common mercurial remedies, the eclectic student spent his time discovering the medicinal properties of indigenous plants, which from our vantage point seems to have been a wise choice.²⁶

Laboratory work at the Institute was limited to the dissection of the human body. The purpose of these dissections, according to the professor of surgery, was "not so much to obtain a knowledge of the structure [of the body] or to describe the parts but in order to learn the relative position of the parts" and thus prevent needless surgical errors.²⁷ The increasing use of anesthesia by the mid-1850s was making such information absolutely essential for any young surgeon. The entire third floor of the Institute was reserved for gross anatomy and was equipped with "tables, gas lights, and every necessary convenience"—including a separate compartment for the female students. Throughout most of the antebellum period students were forced to work at breakneck speeds to complete their dissections before the decomposing cadaver made further

²⁵ McElhinney Diary, vol. 13. Prior to 1870 the sixteen-week session was standard among the respectable Ohio medical schools; see Waite, "Medical Education in Ohio," p. 625.

²⁶ J. R. Buchanan, "Introductory Lecture," *Eclectic Med. J.*, 1854, 13: 528; McElhinney Diary, vol. 13. After reading student lecture notes from the Eclectic Medical Institute, Pickard and Buley (*Midwest Pioneer*, p. 302) reached a similar conclusion about "the wide discrepancy in the nature of the knowledge obtained by the student in anatomy and in *materia medica*." Anatomical instruction was conventional; the *materia medica* was sectarian.

²⁷ McElhinney Diary, vol. 13. According to Waite, "Medical Education in Ohio," p. 625, "The only required laboratory instruction in Ohio prior to 1888 was the rapid dissection of the human cadaver. . . . The giving of optional laboratory courses in chemistry was begun in one regular medical college in 1868 and extended to many other institutions in the next 20 years."

work impossible. But in 1854 the Institute announced that a Cincinnati physician had discovered a means of preserving the bodies, "fresh and inodorous," for many weeks, "thus rendering the studying of anatomy entirely free from its usual repulsiveness."²⁸

Every Tuesday and Friday afternoon McElhinney spent three hours in required attendance at Newton's Clinical Institute witnessing diverse treatments and surgical operations. Mostly there were routine complaints of fever, diarrhea, cancer, and the like, but occasionally there was a more intriguing case, such as the youth whose "bad habits" had brought on paralysis, or the one-eye, dog-eared monster which the professor thought had resulted from the mother's shock at seeing her favorite dog shot in the forehead.²⁹ Two brothers, R. S. and O. E. Newton, had opened the clinic in 1853 in order to provide clinical instruction for eclectic students, who had difficulty obtaining access to the city's Commercial Hospital, which was in the hands of the regulars. The Newtons had remodeled a five-story building in downtown Cincinnati, equipping it with clinical facilities and furnishing it "in the most modern style, with bells, gas-burners, and hot and cold water in every [patient's] room."³⁰ Their clinic had limitations, especially surgically, but it did give students at the Eclectic Medical Institute considerably more clinical exposure than many of their contemporaries.³¹

At the close of the winter session, after sitting through only one course of lectures, McElhinney withdrew from the Institute, returned to his home in Newport, near Marietta, and hung out his shingle. Practicing without a degree was more the rule than the exception, and he apparently could see no good reason for spending another term in school and paying

²⁸ "Tenth Annual Announcement of the Eclectic Medical Institute," p. 366. The Cincinnati physician mentioned was obviously not the first person to embalm a cadaver. During the 1840s and 1850s many people were searching for new ways to preserve anatomical material. See e.g. J. N. Gannal, *History of Embalming, and of Preparations in Anatomy, Pathology, and Natural History; Including an Account of a New Process for Embalming*, transl. from the French... by R. Harlan (Philadelphia, 1840), esp. pp. 197-252.

²⁹ McElhinney Diary, vol. 13; Z. Freeman, "Newton's Clinical Institute," *Eclectic Med. J.*, 1855, 14: 122-28; 153-59.

³⁰ *Eclectic Med. J.*, 1855, 14: "Journal Advertiser," p. 4; G. W. L. Bickley, "Newton's Clinical Institute," *ibid.*, 1854, 13: 118-19. Apparently the trustees of the Commercial Hospital did experiment briefly with admitting both regular and eclectic students, but terminated the arrangement when bloody fights broke out almost every day; see Juettner, *op. cit.* (n. 11 above), pp. 402-403.

³¹ On clinical instruction before the Civil War, see Norwood, *op. cit.* (n. 2 above), pp. 401, 432.

a substantial graduation fee when he could just as well be out earning a livelihood for his family.³² He did lack the required three-year apprenticeship, but there is reason to suspect that the Institute would not have let that technicality stand in the way of his obtaining a degree. As William Frederick Norwood has shown, medical faculties had by this time become quite adept at circumventing regulations in pursuit of graduation fees. Still, even the best schools graduated only about one-third of their matriculants.³³

Within a few months after returning to Newport "Doctor" McElhinney had built up a sizeable practice, riding horseback throughout the township and dispensing medicines from his saddlebag. His fees were moderate by contemporary standards, and to the poor he gave his services free. Over the first ten years he treated an average of 600 cases annually, with a yearly mortality rate reported to be only one and one-fourth per cent. Though not doctrinaire—he never regarded himself as a sectarian—he remained loyal to the eclectic cause and eventually sent both of his sons to the Eclectic Medical Institute. During the Civil War he served briefly as a regimental captain and assistant surgeon, and later ran unsuccessfully as a Prohibitionist candidate for the Ohio State Senate and the United States Congress. In the summer of 1905, after fifty years of ministering to the sick of Newport, Joseph McElhinney passed away.³⁴

During the half-century spanned by McElhinney's career the Institute's fortunes fell and rose remarkably. In 1856, only one year after McElhinney's departure, a violent conflict erupted within the Institute. The fight ostensibly began as a personal quarrel between C. H. Cleaveland and R. S. Newton over the efficacy of certain concentrated remedies Newton was promoting, but it soon engulfed the entire faculty, with Newton and a surgeon on one side and Cleaveland, Buchanan, and the remaining professors on the other. The election in April of two separate

³² McElhinney is not listed among the matriculants for the spring session, 1855, nor is his name among the graduates of that year; "Eclectic Medical Institution: Eleventh Annual Announcement," pp. 400-402. Even with his limited medical education he could make over twice as much as he had earned as a school teacher. His income as a teacher was \$75 a quarter; during an equal period as a beginning physician (October-December, 1856) he made over \$160 after expenses. See the McElhinney Diaries, vol. 11 (December, 1852-November, 1853), and vol. 22 (September, 1856-July, 1857).

³³ Norwood, *op. cit.*, pp. 404-406, 432.

³⁴ On McElhinney's life as a physician, see the various volumes of the McElhinney Diaries and the biographical sketch found in the *History of Washington County, Ohio* (Cleveland: H. Z. Williams & Bro., 1881). The mortality figures probably did not include deaths in infancy and old age.

boards of trustees, each claiming legal right to the Institute, was the signal for open warfare. Newton and a band of allies quickly occupied the college building, but were promptly besieged by Cleaveland's forces wielding knives, pistols, chisels, bludgeons, and blunderbusses. At one point the "usually staid Prof. Buchanan" was heard exhorting the troops outside with cries of "On, on! my brave lads," but to no avail. For over twenty-four hours the siege dragged on, until the appearance of a six-pound cannon at the Institute's entrance convinced the Cleavelandites it might be more expedient to retire to the neutral ground of a courtroom. A prolonged and lively court battle ended in victory for the Newtonians, whereupon the defeated professors, in typical 19th-century fashion, opened their own school, the Eclectic College of Medicine, in the same building where years earlier a rebuffed Daniel Drake had established a rival to the Medical College of Ohio.⁸⁵

Newton may have won the battle for immediate control of the Institute, but the real fight was only beginning. Declining student enrollment, brought on partially by internal strife and partially by the growing desire of Southern students to remain in the South, soon pushed the Institute to the brink of financial ruin. In 1859 the Eclectic College of Medicine reunited with the Institute, but even this could not stem the tide. The situation soon grew so desperate that the faculty began talking openly of shutting down the school. Then in 1862, just as the Institute was about to succumb, John Milton Scudder, valedictorian of the class of 1856, took charge of the college and skillfully led it through the valley of death to a new age of peace and relative prosperity. Throughout the remainder of the century the Institute struggled to keep pace with reforms in medical education by gradually extending its course of study to four years and by requiring additional laboratory work and daily clinical instruction. The resources of the Institute were not great enough, however, to meet the ever-increasing demands of 20th-century medicine, and in 1910 the

⁸⁵ G. W. L. Bickley, "History of the Eclectic Medical Institute of Cincinnati, and its ethical peculiarities: chapter IV," *Eclectic Med. J.*, 1857, 16: 152-56; Juettner, *op. cit.* (n. 11 above), p. 368. For an account of the schism from the Cleaveland-Buchanan point of view, see the following editorials in *College J. Med. Sci.*: "Expurgation of the Institute—litigation and riotous proceedings of the expelled professors—sentiments of the class," May, 1856, 1: 182-89; "Concentrated extracts of falsehood," June, 1856, 1: 223-25; and "The decision," November, 1856, 1: 427-30. McElhinney seems to have sided with the Cleaveland faction. He subscribed to the journal published by the faculty of the Eclectic College of Medicine and defended Cleaveland against criticism appearing in the *Eclectic Medical Journal*. See McElhinney Diary, vol. 22; and [Joseph M. McElhinney], "The powers of life," *College J. Med. Sci.*, September, 1856, 1: 335-37.

college failed to win Abraham Flexner's coveted stamp of approval. Yet death did not come immediately. It was 1938 before the Institute finally expired in its ninety-third year.³⁶

This brief look at eclectic medical education suggests in a modest way the need for a reappraisal of 19th-century medical sectarianism. Martin Kaufman's recent study of *Homeopathy in America* points in the same direction.³⁷ The educated irregulars, particularly among the homeopaths and eclectics, simply were not the incompetent charlatans their enemies made them out to be. Judged by almost any criterion—quality of faculty, physical facilities, length of terms, or time devoted to clinical instruction and anatomical dissection—the Eclectic Medical Institute was at least the peer of the average regular school. Admittedly it was not the best in the country, but it was far from the worst. And it may well be that the eclectic physicians sent out from Cincinnati in the 1840s and 1850s did their patients less harm than many doctors who proudly displayed the most orthodox of credentials.

³⁶ Scudder, "A Brief History of Eclectic Medicine," p. 305; Juettner, *op. cit.* (n. 11 above), pp. 376-77; Felter, *op. cit.* (n. 1 above), pp. 45-72; Abraham Flexner, *Medical Education in the United States and Canada* (New York: Carnegie Foundation, 1910), pp. 283-84.

³⁷ Martin Kaufman, *Homeopathy in America: The Rise and Fall of a Medical Heresy* (Baltimore: Johns Hopkins Press, 1971).

THE USES AND ABUSES OF OPIATES IN NINETEENTH-CENTURY ENGLAND *

ELIZABETH LOMAX

During the nineteenth century opiates were probably more extensively employed in England than in any other European country.¹ They were taken with, or without, medical authorization for major, minor, or even imaginary ailments, and sometimes exclusively for their euphoric effects. They were as readily available as is aspirin today, and just as cheap. For one penny a man could purchase a pint of beer and, for the same sum, a quarter of an ounce of laudanum, containing about ten grains of opium.² The more gregarious individual would choose the former, the more introspective, whether an intellectual or a manual worker, might well prefer the latter. But, whereas the national intake of alcohol reached massive proportions in the mid-nineteenth century, opium eating remained a circumscribed habit. Since the legislature, in spite of the efforts of various select committees, could not find an acceptable formula for reducing the major social problem of drunkenness, it was hardly likely to concern itself with the minor issue of opium eating.³ Nor could it, in all conscience, do so energetically while simultaneously encouraging the opium trade between India and China, for fiscal reasons.

Medical practitioners prescribed opium liberally, with some reason, since it was one of the few effective therapeutic agents then available. They were apparently neither concerned with the danger of inducing drug dependence, nor even aware that the condition might be of iatrogenic origin. The professional journals were replete with articles expounding the virtues of opium, and suggesting its employment for almost every

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¹ C. E. Terry and M. Pellens, *The Opium Problem* (New York: Bureau of Social Hygiene, 1928), p. 62.

² According to A. S. Taylor, *On Poisons* (Philadelphia, 1875), p. 534, the medicinal dose of opium, for an adult, varied from half a grain to two grains, i.e. 32 to 128 mg. According to R. Christison, *A Treatise on Poisons* (Philadelphia, 1845), p. 531, laudanum contained one-twelfth part of its weight of the active ingredients of opium.

³ Edwin Chadwick warned the Select Committee on Inquiry into Drunkenness that, if alcohol sales were restricted, people might be driven to some other form of enjoyment, e.g. opium eating; *Report from the Select Committee on Inquiry into Drunkenness* (London, 1834), p. 33.

known disease. At some time or another, the drug was advocated as a specific for diabetes, consumption, syphilis, cholera and rheumatism, as a sedative in delirium tremens, mania and in febrile diseases, as an antitussive agent in phthisis and almost every other chest disease, and even as a remedy for obstinate constipation.⁴ More reasonably, judged by today's practice, opiates were also recommended in the treatment of hemorrhage, diarrhea, intestinal and renal colic, delayed labour, and the pain resulting from fractures and surgical operations.

On the other hand, the medical journals contained almost as many references to the toxic nature of opium. The symptoms and treatment of acute poisoning were described repeatedly, and must have been well known even to the novice. Energetic mechanical evacuation of the stomach was usually recommended, and by such means a great many lives were saved.⁵ Between 1846 and 1856, 65 cases of laudanum poisoning were treated at the London Hospital, and of these only four died.⁶ Nor did everyone who took an overdose of opiate end up in hospital. Mrs. Beeton seems to have thought that such accidents could be treated adequately at home. In her *Book of Household Management*, she detailed the symptoms of opium poisoning.⁷ She then suggested that an emetic should be given, followed by strong coffee or tea, and the patient walked up and down for a couple of hours, but she made no mention of the advisability of sending for a physician.

Officially, opium and its preparations were responsible for more premature deaths than any other chemical agent. According to the 1839 returns from the coroners of England and Wales, the total number of deaths by poison, for 1837 and 1838, was 543.⁸ Opiates accounted for 186, including no fewer than 72 among children. Arsenic caused 184 deaths, almost exclusively among adults. According to the sixth annual report of the Registrar-General, in the year 1840, five deaths per million living were due to opium poisoning, and only two per million were

⁴ See, for example, William Davidson, "On the therapeutical properties of some of the more important articles of the Materia Medica, I—Opium," *Glasg. Med. J.*, 1853-54, i: 288-295.

⁵ "Dr. Paris on poisons," *Med.-chir. Rev.*, 1824, Ser. 2, 1: 316-330.

⁶ *Report from the Select Committee of the House of Lords on the Sale of Poisons, etc. Bill* (London, 1857), pp. 86-87.

⁷ Isabella Beeton, *The Book of Household Management* (London: S. O. Beeton, 1861), pp. 1086-1087.

⁸ "Deaths by poison in the counties of England and Wales," *Edinb. Med. & Surg. J.*, 1840, 53: 256-263.

caused by arsenic.⁹ But alcohol, although not classed as a chemical poison, was responsible for a much greater mortality. In 1840, 12 deaths per million living were ascribed to "intemperance" (a term which usually referred to the abuse of alcohol but which also included opium eating), and 15 deaths per million were attributed to "delirium tremens."¹⁰ Considering that this was a record only of the mortality obviously referable to alcoholism, the rest of the havoc caused by excessive drinking may be imagined.

However, for the youngest age group, that from zero to five years, opium and not alcohol was the more dangerous drug. It was liberally employed as an infant sedative, especially in the manufacturing districts where mothers went out to work and left their babies in the charge of unskilled day nurses.¹¹ The latter would often reduce their weekly charge by threepence, or sixpence, if the mother provided the necessary "quietening mixture."¹² The more economical housewife could buy laudanum directly from the chemist, or the grocer, and make up her own sedative syrup. Some even administered undiluted laudanum; a few drops at first, and then more as the baby became tolerant to the drug. But, most commonly, mothers and nurses used the proprietary infant preparations which contained opiates.

According to A. S. Taylor, there were ten of these available in 1857.¹³ Some, including Godfrey's Cordial and Dalby's Carminative, had been on the market since the eighteenth century. Most had rather alluring titles, such as Mrs. Winslow's Soothing Syrup, commonly known as "Quietness," and Atkinson's Royal Infant Preservative. (Mrs. Winslow's Soothing Syrup came to England from the United States.) According to Engels, some parents really thought that these preparations were beneficial to the infant, and it was widely held that Godfrey's Cordial strengthened the heart.¹⁴ More probably, working mothers who dosed their infants with opiates did so exclusively for the sake of peace and quiet, without appreciating the dangers inherent in the practice. The elderly relative, or the baby farmer, would only care for an undemanding

⁹ *Sixth Annual Report of the Registrar-General* (London, 1844), p. 171.

¹⁰ *Fourth Annual Report of the Registrar-General* (London, 1842), pp. 129-130.

¹¹ See the chapter entitled "Infant Preservatives," in: Margaret Hewitt, *Wives and Mothers in Victorian Industry* (London: Rockliff, 1948), pp. 141-152.

¹² *Report of the Select Committee on Protection of Infant Life* (London 1871), p. 21.

¹³ *Report... on the Sale of Poisons, etc. Bill* (1857), p. 108.

¹⁴ Friedrich Engels, *The Condition of the Working Class in England*, translated by W. O. Henderson and W. H. Chaloner (Stanford University Press, 1958), p. 118.

baby; the mother had to work to make ends meet, so the obvious answer was a dose of "quietness," repeated when necessary. But working-class babies were not the only ones regularly narcotized. The same could happen in more prosperous families, where the parents employed a full-time nurse to care for the infant. Mrs. Beeton cautioned the mother to protect her infant:

...from the nefarious practices of unprincipled nurses, who, while calming the mother's mind with false statements as to the character of the baby's cries, rather than lose their rest, or devote that time which would remove the cause of suffering, administer, behind the curtains, those deadly narcotics which, while stupefying Nature into sleep, insure for herself a night of many unbroken hours.¹⁵

Similar warnings were given by many physicians and authors of books and magazine articles on infant management.¹⁶ One gains the impression that middle-class mothers were themselves not above sedating their children when convenient, but that it was more tactful to indict the nurse.

Sometimes the infant was killed by an accidental, or even deliberate, overdose. Unless the intent to commit murder could be proved, the mother was let off with a caution, for she could not be accused of the manslaughter of her own child.¹⁷ The nurse was not so protected by law. But usually such deaths were unintentional, for it was all too simple to administer an excess of opiate to a baby. Firstly, because the margin of safety was so small, or, as expressed in the *Edinburgh Medical and Surgical Journal* of 1840, "narcotic, and anodyne drugs, powerful though they be in the adult, act with infinitely greater energy upon the more sensitive nervous system of the infant."¹⁸ Secondly, the danger of poisoning was increased by the uncertain composition of both nostrums and pharmaceutical preparations. According to Hassall, opium was one of the most commonly adulterated drugs; he had subjected 55 samples to chemical and microscopic analysis, and found only five to be pure.¹⁹ With such raw materials even a conscientious pharmacist

¹⁵ I. Beeton, *op. cit.* (n. 7. above), p. 1032.

¹⁶ See, M. Underwood, *Treatise on the Diseases of Children* (Philadelphia, 1842, from the 9th English ed.), pp. 106-107. A long footnote includes comments by John Clarke, Samuel Merriman, Marshall Hall and Robert Christison. Also, *The Family Oracle of Health*, 1827, 4: 22-23.

¹⁷ A. S. Taylor, *On Poisons* (London, 1848), p. 601. In 1847 a case was tried in the Chester Assizes (Reg. v. Deays). The judge held that the careless or negligent administration of a drug by a mother could not be manslaughter, even if it proved fatal.

¹⁸ *Edinb. Med. & Surg. J.*, 1840, 53: 262.

¹⁹ *Report of the First Select Committee on Adulteration of Food* (London, 1855), p. 22.

would experience difficulty in preparing mixtures of known and constant composition. The more careless chemist might make other errors in dispensing. Thus, if Godfrey's Cordial was prepared with insufficient alcohol to dissolve all the opium, a sediment of narcotic would settle at the bottom of the bottle, with potentially disastrous consequences when the last spoonfuls were taken.²⁰

If the infant escaped acute poisoning, it might still die of marasmus or inanition, the results of constant sedation with opiates. The physician might not suspect the underlying cause of death, and would certify it as due to "lack of breast milk," or "starvation," or simply "failure to thrive." Thus, many fatalities, attributable to opiates, escaped official notice. Yet in 1816, Marshall Hall had described causes of infants suffering from the effects of chronic poisoning, and suggested that this condition should be distinguished from other causes of malnutrition.²¹ Even earlier, in 1808, the author of a report from the General Hospital near Nottingham had declared that infantile atrophy could be produced by "the general and shameful abuse of opium."

The pallid countenance—tremulous, and often convulsive motion—emaciated form—the stupor, timidity, and fretful temper, are too generally attributed to want, neglect, and unhealthy situations. Were this the case, relief might be administered; but the melancholy truth is, "the poison lurks in the veins, and in secret is working, to the gradual destruction of the infant frame."²²

In Nottingham, which then had a population of about 30,000, more than 200 lbs. of opium, and 600 pints of Godfrey's Cordial, were retailed annually to the poorer people. Nor had the situation changed for the better 35 years later. Then, R. D. Grainger reported to the Children's Commission that in Nottingham laudanum was given to the infant in gradually increasing doses, until it would bear from 15 to 20 drops at a time.²³ The majority of such children had died before reaching the age of two, and those that survived were often half idiotic, with their "constitution ruined for life."²⁴

The few physicians who concerned themselves with child health unhesitatingly blamed mothers for their ignorance and callousness. But

²⁰ "Report from the General Hospital near Nottingham," *Edinb. Med. & Sur. J.*, 1808, 4: 270-273.

²¹ M. Hall, "Contributions to diagnosis," *Edinb. Med. & Surg. J.* 1816, 12: 423-428.

²² *Edinb. Med. & Surg. J.*, 1808, 4: 272.

²³ Taylor, *On Poisons* (1848), p. 590.

²⁴ Mr. Grainger's report in the *Appendix to the Second Report of the Commissioners, Trades and Manufacturers, Part I* (London, 1842), pp. F10-F11.

this was hardly fair, or constructive. What was the female lace maker of Nottingham, the mill worker of Lancashire, or the agricultural labourer of Lincolnshire, supposed to do with her fretful baby? She could not take it to work, for there were no crèches available. Even if she remained at home, as did the lace workers, she could not put in enough hours to remain employed, unless she ensured that her infant did not disturb her. Of course she could give up work and devote herself to her children, but this might mean that the family income fell below subsistence level. Nor could she easily obtain advice on sound infant management. Most working class mothers were fearful, or suspicious, of the medical practitioner, and only consulted him when their children were moribund, and then often only to get a death certificate without trouble. Before 1850, there were only four children's dispensaries in the country and no pediatric hospitals. (Infant welfare clinics were a twentieth-century innovation.) So the young wife relied on local gossip, and the counsel of older women and relatives. In many communities opiates were considered most effective infant sedatives, which indeed they were.

No one will ever know how many of these children were killed by design rather than by accident, nor even how many opiate deaths escaped attention altogether. The latter could easily happen for the coroner was under no obligation to order either inquest or autopsy in cases of sudden death. Pressured by the local justices to keep expenses down to a minimum, the coroner usually avoided making inquiries unless death was obviously due to violence, and this was not usually evident when poison had been employed.²⁵

A series of murders by poison, culminating in the famous Palmer trial of 1856, brought matters to a head. The public demanded protection, the national press clamoured for government intervention, and the foreign press renewed its derision of British laxity in controlling the sale of poisons.²⁶ The French, and especially the Prussians, accustomed to strict regulations in these matters, could not understand the laissez-faire attitude extant in England.²⁷ Nor could many Britons, although there

²⁵ The restrictions imposed on coroners in early nineteenth-century England are described by J. D. J. Havard, in *The Detection of Secret Homicide* (London: Macmillan, 1960), pp. 42-64.

²⁶ J. Bell and T. Redwood, *Historical Sketch of the Progress of Pharmacy in Great Britain* (London, 1880), pp. 242-245; "Poison," *Household Words*, 1856, 13: 220-224; "What shall we do with the Poison Trade?" *Dubl. Univ. Mag.* 1857, 49: 160-176.

²⁷ Rapidly increasing sales of opiates in England had been reported in the *J. Pharm. Chim., Paris*, 1849, 15: 121, and 1850, 17: 137-138. The author of the first article suggested that members of temperance societies were substituting opium for alcohol.

was some dissension as to whether the purchaser or the seller should submit to controls. *The Times* wanted no interference with the right of people to buy useful but poisonous drugs.²⁸ Instead it demanded regulation of the chemist's trade, so that the right drug, in the correct amount, would be supplied to the customer.

In May 1857, a bill to restrict and regulate the sale of poisons was brought before the legislature. Mainly on account of vigorous opposition by members of the Pharmaceutical Society, it was not enacted until 1868, having been considerably amended in the interim. The original bill provided that 23 substances, including opium and its derivatives, should be scheduled as poisons. These should be kept under lock and key by the chemist, only sold to an adult, and then in the presence of a witness who knew both purchaser and vendor, and a record kept of the circumstances of the sale.²⁹ The pharmacists were overwhelmed at the sight of so many regulations, and branded the bill as ridiculous and unrealistic. They considered, as did *The Times*, that the sale of poisons should not be hedged in by unnecessary restrictions, but instead be regulated by ensuring the competence of the vendors. The latter should either be members of the Pharmaceutical Society, or have passed an examination approved by the Society.

The pharmacists strongly objected to the inclusion of opiates in the bill, on the principal that its effectiveness would be jeopardized by this requirement. They reasoned that these drugs were so frequently purchased that if every sale, however small, had to be recorded, an intolerable strain would be placed on the chemists. Furthermore, since the demand would continue, severe restrictions would tend to throw the trade in opiates into the hands of a low and ignorant class of vendors, i. e. an illegal market would be created.³⁰ Even A. S. Taylor, who as professor of medical jurisprudence at Guy's Hospital was well aware that more than a third of all deaths from poison were caused by opiates, had to concede this point. Whereas in 1857 Taylor was insisting that the sale of these drugs should be severely controlled, by 1865 he had agreed that this requirement was impracticable, although still desirable.³¹

When the bill was finally passed, as part of the Pharmacy Act of 1868, opiates had been relegated to "Part II" of the schedule of poisons. As

²⁸ *The Times*, 1857, June 5, p. 9, col. 4-5.

²⁹ Bell and Redwood, *op. cit.* (n. 26 above), pp. 253-254.

³⁰ *Report... on the Sale of Poisons, etc. Bill*, (1857), p. 35, p. 38 and p. 56.

³¹ *Special Report from the Select Committee on the Chemists and Druggists Bill and Chemists and Druggists (No. 2) Bill* (London, 1865), p. 5.

such they could only be sold by a registered chemist or druggist, or by a legally qualified apothecary. They also had to be in a container labelled with the name of the article, the word "poison," and the name and address of the vendor. There was no need for any entry in the register of poisons, for the buyer to be known to the seller, nor any restriction on the amount sold. Furthermore, the Act specifically excluded patent medicines from the regulations.³²

The best that can be said for the Act was that it made it more difficult for adults to take opiates, or give them to children, by mistake for some other drug. The buyer was warned; the rest was left to his common sense. No difficulty was put in the way of the mother, or nurse, who wanted to sedate an infant, and so the practice continued. Proprietary medicines were considered outside the scope of the Act and so, as Dr. Curgenven pointed out to the Select Committee on Protection of Infant Life (1871), there was no check at all over the sale of Godfrey's Cordial, or any patent medicine containing opium derivatives.³³ In other words, neither professional nor layman yet made a distinction between proprietary and true "patent" medicines.

The 1868 Act was thus interpreted for the next 24 years. But during the 1890s, mainly as a result of the exertions of the Pharmaceutical Society and of Ernest Hart, the editor of the *British Medical Journal*, the principle that any proprietary medicine which contained a poisonous substance was intended within the meaning of the 1868 Act was tested in a series of court cases.³⁴ The outcome was favourable, and consequently all these preparations, which included the infant preservatives, had to be labelled "Poison," and could only be sold by qualified registered chemists. (Previously, grocers and provision dealers had retailed them under licence from the manufacturers.) This seems to have dealt a death blow to the production and sale of infant sedatives. In 1909 the British Medical Association published a compilation of "secret remedies" on the market, including their contents and the purpose for which they were recommended.³⁵ The only ones sold for infants were "teething powders," containing calomel and sugar of milk. These, as we are now aware, were not exactly harmless, yet this was a great improvement on the earlier situation.

³² "The Pharmacy Act of 1868," *Lancet*, 1868, ii: 649-650.

³³ *Report of the Select Committee on Protection of Infant Life* (London, 1871), p. 69.

³⁴ "Poisons in Secret Medicines," *Brit. Med. J.*, 1893, ii: 899.

³⁵ *Secret Remedies* (London: B. M. A., 1909).

Infant deaths attributable to opiate poisoning declined during the last quarter of the nineteenth century. During the year 1870, 23 such deaths were reported, an average of twelve per year between 1883 and 1892, and only six for the year 1896.³⁶ By the early twentieth century, physicians no longer discussed narcotics as a threat to infant life. George Newman wrote a complete text on the causes of infant mortality without ever mentioning opiates, whereas he expounded at length on the dangers of lead poisoning, and of alcoholism in the mother.³⁷ Finally, the Pharmacy Act of 1908 placed opium, and all preparations containing one or more percent of morphine, into part I of the Schedule of Poisons, i. e. among the more severely restricted drugs.

Could this not have been achieved 40 years earlier? Perhaps—if the medical profession had been as united, and as well organized, as the pharmaceutical chemists, and so able to pressure the government effectively. Unfortunately, most practitioners paid little attention to the various poison bills until too late. In July 1868, the Medical Council inquired why opium had been removed from the first part of the poison schedule, and was told that the promoters of the bill had done so to placate the Lincolnshire, Cambridgeshire and Norfolkshire chemists.³⁸ These men had argued that the original requirements would have seriously interfered with their business—opium being one of their chief articles of trade. (In the Fenlands, the drug was employed extensively as a prophylactic against malaria, and a majority of the inhabitants were thought to be opium eaters.) The members of the Medical Council voted unanimously that opium should be reinstated, but the Home Office ignored their representation on this point.³⁹ The bill went through much as it had been prepared by the pharmaceutical chemists, since without their cooperation the Act would have been a dead letter.

As a group, the pharmacists were unconcerned with the dangers of drug abuse, either in adults or children. As practical business men, they reasoned that a popular article like opium should be sold with a minimum of restrictions, otherwise neither the public nor the druggists would comply with the requirements of the Act. If opium was a dangerous drug, it was up to the physicians to declare it so, and require that it should only be

³⁶ *Thirty-third Annual Report of the Registrar-General* (London, 1872), pp. 175-183; A. W. Blyth, *Poisons* (London: Griffin, 1895), pp. 288-289; *Fifty-ninth Annual Report of the Registrar-General* (London, 1897), pp. 242 and 249.

³⁷ George Newman, *Infant Mortality* (New York: Dutton, 1907).

³⁸ *Brit. Med. J.*, 1868, ii: 39.

³⁹ *Brit. Med. J.*, 1868, ii: 40.

sold on prescription. This point of view was expressed succinctly by Jacob Bell: "We have struck opium out of the schedule as being a substance coming under the same category as tobacco. It is a medical question whether persons ought to be permitted to take opium or not. In many places they take it partly medicinally, but partly as a habit; we insist upon their taking it in China, although the Chinese object to it." ⁴⁰

So opium was tossed in and out of the poison list, because no one could agree on what should be done with such a popular, versatile and potent drug. Finally, it was decided that too many people would be inconvenienced by severe restrictions on its sale. Even the government was not disinterested, since it supported the lucrative opium trade between India and China, without regard to the health of the people of either country. So also in England the interests of small children were sacrificed to those of adults, and in 1868 no serious attempt was made to discourage the sale of infant sedatives. Today this may seem incomprehensible, but 100 years ago children were not deemed very important. They had no rights, either in the family or out of it, until they reached working age. Soon all this was to change, but in 1868, although the government had a good knowledge of the extent to which infants were drugged and killed by opiates, it declined to act decisively on their behalf. ⁴¹

⁴⁰ *Report... on the Sale of Poisons. etc. Bill* (1857), p. 22.

⁴¹ For example, evidence of the administration of opiates to children was given to the Children's Commissions of 1833 and of 1842, and also to the Health of Towns Commission of 1845.

AMERICAN DOCTORS AND THE PARISIAN
MEDICAL WORLD, 1830-1840 (Concluded)

RUSSELL M. JONES

III

The Parisian medical world Americans confronted in the 1830s was more than hospitals, clinics, cases, operations, lectures, and private courses. It was also men: the surgeons, clinicians, and specialists whom they watched, heard, evaluated, and formed friendships with. "We see and hear," wrote Gerhard, "the men who are so well known to us in America, learn to form a correct estimate of their relative worth."¹⁰⁷ ". . . before I left America," commented Holmes, ". . . I compared many of our physicians with what they ought to be, and now with what I see others are."¹⁰⁸ "I never took any *real* interest in Medicine until I came here," confessed Peter Porcher, "for really our manner of teaching it in the United States is so much of quacks, you see so little of science in the profession that it is quite trash, and time lost, but here you have men who are really prodigies of learning, men who have grown old and blanced in the walks of wisdom."¹⁰⁹

Who were the medical notables whose professional skill, personal manner, and teachings most impressed Americans during this period, and what did American doctors think of them? In their letters and diaries many are mentioned, such as Jules Cloquet, Baron Larrey, Ricord, Amussat, Magendie, Richerand, and Marjolin; but some whom historians consider significant were ignored altogether. For example, Ackerknecht regarded Chomel, Louis, Andral, Rayer, Bouillaud, Piorry, Rostan, and Trousseau as the most important "eclectics;"¹¹⁰ but only the first three received much attention from Americans. Indeed, Bartlett included none of these men in his biographical sketches of Parisians whose work and careers he considered as inspiring examples for American medical students.¹¹¹ Unlike later historians Americans at the time judged French medical men by what they did and said rather than by what they had

¹⁰⁷ Osler, *An Alabama Student*, p. 205.

¹⁰⁸ HP, August 13, 1833.

¹⁰⁹ Extract from letter from Paris dated February 27, 1837 in Waring, *Medicine in South Carolina*, p. 90.

¹¹⁰ Ackernecht, *Medicine*, ch. VIII.

¹¹¹ Bartlett, trans. *Sketches*.

written. Here we are concerned with their first-hand impressions of Dupuytren, Roux, Lisfranc, Velpeau, and Civiale among the surgeons; Broussais, Andral, and Louis among the clinicians; and three specialists, Ricord, Guérin, and Jules Sichel.

Named a baron by Napoleon, handsome, arrogant, and hard-working Guillaume Dupuytren, in 1815, assumed Desault's chair at the Hôtel Dieu. Until his death in 1835 he directed a surgical *service* consisting of 266 beds, four wards, two other surgeons, ten internes, and fifty-six externes. Arriving early in the morning he visited the *salles* for an hour followed by personnel of his *service*, students, and foreign doctors. Since crowds were large some students stationed themselves at beds half an hour before Dupuytren's visit. His examination and interrogation of a patient were brief; his diagnosis quick and decisive. After the visit he repaired to the amphitheater for *leçons cliniques*—all admired his lucid discussion of a case—several operations—his *sang froid* impressed observers—and autopsies. Then came free consultations in which Dupuytren, seated and flanked by students, interrogated patients.¹¹²

Mason Warren followed this famous surgeon, then at the end of his career, many times. His evaluation was more nuanced than that of other Americans, but representative nonetheless. Mason saw Dupuytren amputate an arm, operate for stone—“. . . one of the most beautiful operations I have seen . . .”¹¹³—remove tonsils, cut a growth from the uterus, and perform his famous operation for artificial anus. The young American started, then abandoned translating Dupuytren's clinical lectures. Yet much as he admired his skill, Warren had critical reservations. He wrote:

Dupuytren is now getting rather careless in his operations from too great confidence in his powers. He was brought to his senses the other day by an accident which will make him take more care in the future. He was operating for strangulated hernia & in the second cut . . . directly into the intestine. He very coolly raised his head & said “*Voilà messieurs le matière fécale*” & quickly stitched it up.¹¹⁴

Indeed, in Warren's opinion, Dupuytren “. . . neither conducts his operations with that care or is as judicious in his treatment before & after the operation as in those patients operated by yourself (John Collins

¹¹² Wiriot, *L'enseignement clinique*, pp. 91-93. Even though one of the main themes of Mlle. Wiriot's monograph is contemporaries' estimates of Parisian clinicians, she included none by Americans.

¹¹³ JMW, November 5, 1832.

¹¹⁴ *Ibid.*, June 6, 1833.

Warren, Mason's father) nor is the ultimate success so great."¹¹⁵

Like others, Warren was shocked by Dupuytren's brutality toward his patients.

If his orders are not immediately obeyed he thinks nothing of striking his patients or abusing him most harshly. A very favorite practice of his during his consultations is to make a handle of the noses of his patients. Whenever a man enters with any disease of the head, he is immediately seized by the nose & pulled down to his knees where he remains half in sorrow & half in anger at the treatment until he is allowed to rise & describe his disease.¹¹⁶

Despite his mixed opinions, Warren, while noting that French medical students had pulled Dupuytren's casket to Père La Chaise cemetery, was moved to write:

At present I see no one here who as yet appears on the horizon who can at all aspire to his place, his lectures on surgical pathology were unique & I have never heard any person attempt to *approfond* the subject in the manner which he has introduced into the clinic."¹¹⁷

Dupuytren's successor, Philibert Roux who moved from La Charité to the Hôtel Dieu,¹¹⁸ made a more favorable impression. "He performs many uncommon operations. . .," wrote Mason Warren.¹¹⁹ Indeed, Warren witnessed more of Roux's work than any other Parisian surgeon. He saw him operate for hernia, fistulas, cataracts, extirpate tumors from the nasal passage and from the neck, amputate the neck of the uterus, and perform lithotomy and his specialty, staphylorraphy. "All his operations . . . are most beautifully performed, but I hear that many of his patients are carried off."¹²⁰ After watching Roux completely quarter "an old man of about 70 for a tumor of the shoulder joint. . .," Warren observed that while he "avoided criticizing the operations of great men who are often most unjustly attacked . . ." he complained that ". . . the operations of Roux depend entirely upon a desire to operate without the least consideration of the case. . ."¹²¹ Roux remained at the Hôtel Dieu until 1854, thus many Americans had a chance to watch and to

¹¹⁵ *Ibid.*, March 30, 1834.

¹¹⁶ *Ibid.*, March 14, 1833.

¹¹⁷ *Ibid.*, February 12, 1835.

¹¹⁸ Wiriot, *L'enseignement clinique*, pp. 98-99; Prévost. *La faculté*, pp. 89-98.

¹¹⁹ JMW, October 16, 1832.

¹²⁰ *Ibid.*, March 14, 1833.

¹²¹ *Ibid.*, October 5, 1834.

hear him. None appraised him as fully as Mason Warren. All agreed that he was a skillful surgeon, but a weak lecturer.¹²²

Jacques Lisfranc who held forth at La Pitié¹²³ stirred mixed reactions. All commented on his commanding presence, bombastic style of lecturing, and his sarcastic jibes at his rivals, especially Dupuytren. Holmes had little regard for him either as a man or as a surgeon, stating that he too readily rationalized his failures and bled excessively.¹²⁴ William Gibson thought him competent despite eccentricities.¹²⁵ Mason Warren, who followed him more frequently, offered the most balanced and informed estimate, if not the most typical. Lisfranc's lectures and operations on diseases of the neck of the uterus were interesting, original, and practical despite the rhetoric. "It is his surgical anatomy in which Lisfranc chiefly distinguishes himself as it is made with an exactitude which leaves an impression on the mind of the student" and his amputations were rapid and neat.¹²⁶ Yet, like Dupuytren and Roux, his operations were marred by too much haste and too little attention in preparing the patient.¹²⁷

Of the five surgeons who made the strongest impression on Americans, Velpeau and Civiale were most liked and admired. Son of a blacksmith, Velpeau rose to medical eminence in the 1830s. In 1835 he moved from La Pitié to La Charité, succeeding Roux, and remained there until 1867.¹²⁸ Americans frequently cited his successful struggle upward from humble origins as an example of industry rewarded and of genuine merit recognized.¹²⁹ Indeed, Holmes felt that he owed his fame more to his erudition, industry, and common sense than to professional skill and complained that his chief fault as a lecturer was "over much learning."¹³⁰ Wolfley, who followed him more than any other surgeon, admitted that while his lectures could be easily understood—since most Americans lacked fluency in French they appreciated teachers they could understand—they

¹²² Wolfley, p. 531; Oliver Wendell Holmes Mss draft of article written for the *Boston Medical and Surgical Journal* (Houghton Library). Hereafter cited as Holmes Mss; JCW.

¹²³ Wiriot, *L'enseignement clinique*, pp. 100, 163-173.

¹²⁴ Holmes Mss.

¹²⁵ William Gibson, *Rambles in Europe in 1839 with Sketches of Prominent Surgeons, Physicians, Medical Schools, Hospitals*, etc. (Philadelphia, 1841), p. 80.

¹²⁶ JMW, December 6, 1834.

¹²⁷ *Ibid.*, December 29, 1833.

¹²⁸ Prévost, *La faculté*, pp. 89-98; Wiriot, *L'enseignement clinique*, pp. 163-173.

¹²⁹ Gibson, *Rambles*, pp. 64-65, 69-72, 74-75.

¹³⁰ Holmes Mss; Cf. JCW and J. Rübrah, "Willard," p. 385.

were rather diffuse. Still "...even in a trifling case he lays down important rules and principles." ¹³¹

Although he attended Dupuytren, Roux, Lisfranc more frequently, Mason Warren recognized Velpeau's abilities. Among the first books Warren purchased in Paris was Velpeau's on operative surgery which he (Warren) used in the dissecting room, although he believed it was less convenient than his father's manual.¹³² Velpeau's assertion, in his inaugural lecture at La Pitié, that no theory would influence his practice the young Bostonian regarded as sound.¹³³ And when the next year (1835) Velpeau commenced his course at La Charité, Warren praised the lecture as "...replete with the most true scientific & surgical spirit that I have yet met with abroad among the surgical world." Like Louis, Velpeau thought therapeutics "...were in a great part to be made over again..." and he stressed the necessity of studying the anatomical relations of surgical diseases. "If Velpeau," concluded Warren, "perseveres in the spirit in which he has commenced he will undoubtedly be the most useful man for students existing in Paris... he takes opportunity to point out & discuss the diseases which come under his notice at the bedside..." This method as well as the soundness of his observations the American applauded. He reported approvingly Velpeau's insistence that elderly patients with fractures move about on crutches rather than remain in bed.¹³⁴

Unlike some of his colleagues and rivals Velpeau was especially cordial towards Americans and interested in American surgical achievements. Basset he made his dresser.¹³⁵ Some of J. C. Warren's cases he published in his own work on operative surgery.¹³⁶ In a visit with Gibson he asked about his former students, noting that they translated and extracted American medical writings for him and thus enabled him to keep abreast of surgical developments in the United States.¹³⁷

While Velpeau conceded that some American surgery deserved attention, most Americans readily acknowledged that in one surgical specialty—lithotrity—Parisian operators held first place. Three men, Leroy d'Etiolles, Amussat, and Civiale were best known for their

¹³¹ Wolfley, p. 73.

¹³² JMW, October 6, 1832; January 15, 1833.

¹³³ *Ibid.*, November 6, 1834.

¹³⁴ *Ibid.*, April 5, 1835.

¹³⁵ Osler, *An Alabama student*, p. 7.

¹³⁶ JMW, April 28, 1834.

¹³⁷ Gibson, *Rambles*, p. 68.

instruments, techniques, and successes.¹³⁸ Handsome, wealthy, and extremely polite to Americans, Civiale, of the three, made the strongest impression. Few failed to visit the Necker hospital to watch him perform. All praised his inimitable dexterity with the device he had invented and marvelled that his patients not only felt no pain, but recovered. "To see and know him and witness his performances," wrote Gibson, "is alone worth the trip across the Atlantic."¹³⁹

Thus some Americans' appraisal of five Parisian surgeons. Whether or not all medical visitors from the New World shared the opinions expressed by a few we cannot say. Nor can we be certain how representative are their scattered comments on French surgery in general. An observer's judgements depended upon what he experienced and reflected his previous training. Son of an accomplished surgeon, Mason Warren devoted most of his time in Paris to surgical matters. His estimates of individual surgeons as well as of French surgery in general carry weight even though they may not be typical.

Warren appreciated the opportunities Paris afforded the student of surgery. French surgeons he regarded as hard-working, skillful, and audacious. Yet certain aspects of surgical practice drew his criticism. With the exception of Velpeau, most did not fully and carefully diagnose a case before operating; "... the all important affair is the local affection to which all their efforts are directed."¹⁴⁰ "Some reform," he continued, "is undoubtedly needed in the vague & unsatisfactory way in which the visits of surgeons are ordinarily made."¹⁴¹ Moreover, "... it seems to be more an object... to perform an operation beautifully and quickly than to save the life of the patient..."¹⁴² Claims of cures, Warren suspected, were exaggerated. "Roux in his operations is very unsuccessful in fact all of them are, I do not think they save one out of three. Dupuytren says one out of two are saved—but many die after leaving the hospital worn out by the lengthy cure."¹⁴³ "Surgery as a science," concluded the young American, "is undoubtedly far more advanced in England & America than in France."¹⁴⁴

On the other hand medicine, claimed Warren, was emerging from

¹³⁸ Ackerknecht, *Medicine*, pp. 177-178.

¹³⁹ Gibson, *Rambles*, pp. 89-93.

¹⁴⁰ JMW, January 4, 1835.

¹⁴¹ *Ibid.*, March 22, 1835

¹⁴² *Ibid.*, April 13, 1833.

¹⁴³ *Ibid.*, January 6, 1833.

¹⁴⁴ *Ibid.*, January 4, 1835.

"... that cloudy & theoretical state. . . ." ¹⁴⁵ American admirers of Andral and Louis agreed. As a result of careful observation of numerous cases, exact knowledge of certain diseases was increasing. And scepticism in therapeutics at least demonstrated which remedies, such as blood-letting, did not work. ¹⁴⁶ Some Americans, therefore, rejoiced that Broussais's doctrines of physiological medicine were losing influence during the 1830s while eclecticism gained adherents.

Broussais, Andral, and Louis, as previously noted, were the three clinicians Americans commented on most. Of these the combative "father of physiological medicine" ¹⁴⁷ who assumed, in 1831, the newly created chair of pathology and general therapeutics at the Faculté provoked the most adverse comments, at least among the younger men who were disciples of Louis. Their disdainful comparison between his sweeping general theory of disease and their idol's patient accumulation of facts about specific diseases reflect not only Broussais's declining influence at the time but their own selfconscious rejection of similar principles they had been taught at home before going to Paris.

James Jackson, Jr., Louis's beloved American pupil, best expressed this critical view. Jackson had been in Paris nearly a year before he read Broussais and attended his clinic, ¹⁴⁸ although he had examined some of Bouillaud's work when the latter won the *concours* over Louis, among others, in 1831. ¹⁴⁹ Bouillaud, he described as "... a strong Broussaist, sees inflammation everywhere." ¹⁵⁰ Despite Bouillaud's success, Jackson observed that "... the doctrines of Broussais . . . which have made him most notorious are fast losing ground before the exactness of Louis and the genius of Andral." ¹⁵¹ Jackson, like others, endured Broussais's sparsely attended lectures in order to get a seat for Andral's popular course that followed and exulted that Broussais had so few students. ¹⁵² The more Jackson, emulating Louis's meticulous methods, observed cases and absorbed his master's teachings the more he

¹⁴⁵ *Ibid.*

¹⁴⁶ Wiriot, *L'enseignement clinique*, p. 135; Ackerknecht, *Medicine*, ch. XI, especially pp. 135-136.

¹⁴⁷ On Broussais and his doctrines see Ackerknecht, *Medicine*, ch. VI; Henri Folet, "Broussais et le Broussaïsme," *Bull. soc. franç. d'hist. de la méd.* 1906, 5: 239-305.

¹⁴⁸ JP, February 3, 1832.

¹⁴⁹ *Gaz. méd. de Paris*, 2: nos 27-33 (July 2-August 13, 1831).

¹⁵⁰ JP, December 27, 1831; cf. Wiriot, *L'enseignement clinique*, p. 181.

¹⁵¹ JP, February 3, 1832.

¹⁵² *Ibid.*, November 13, 1832.

denounced Broussais's *a priori* principles. He claims that "typhus, yellow fever, and cholera are all essentially the same disease varying only in complications. I hold that they are as distinct as measles and small pox." ¹⁵³

Although interested primarily in surgery Mason Warren was likewise impressed with Louis's painstaking study of diseases, especially phthisis and gastroenteritis. "All these facts thus collected by Louis come down in a most stunning manner on Broussais as they strike into the very roots of his system. . . ." ¹⁵⁴ Broussais's counterattack, his *Examen des doctrines médicales* which appeared in 1834, Warren dismissed with the observation: "Let him roar & shake as much as he pleases there is no getting rid of him (Louis); the facts are ready to be placed against any theoretical notions offered by Broussais." ¹⁵⁵

Yet we should not assume these critical judgements were unanimous. Broussais had American admirers. La Roche, as we have seen, had summarized his theories and had pointed out the strengths and weaknesses of his therapeutics. ¹⁵⁶ Moreover three of Broussais's works had been translated for American readers by 1832 with his *Treatise on Physiology Applied to Pathology*, first translated in 1826, reaching its third American edition six years later. Bassett called him "a genius who seized the Science of Medicine like a good old doctor would a bottle of lotion, and shook it manfully. France, Germany, all Europe, parts of Asia and America have felt the agitation. . . ." ¹⁵⁷ Mott, a year later, observed that ". . . no physician of prominence had appeared in Paris since Broussais turned to phrenology." ¹⁵⁸

In the opinion of Mott's younger countrymen, however, Gabriel Andral had more to offer. An eclectic and political liberal, he spent most of his career at La Charité before working at La Pitié for six years in the 1830s. He gave no clinics, just *visites commentées au lit du malade*. ¹⁵⁹ His reputation with Americans, therefore, rested on his lectures and writing rather than his clinical teaching although James Jackson, early in his stay

¹⁵³ *Ibid.*, February 22, 1833.

¹⁵⁴ JMW, April 8, 1834.

¹⁵⁵ *Ibid.*

¹⁵⁶ Cf. pp. 17-18.

¹⁵⁷ Bassett, August 28, 1836.

¹⁵⁸ Mott, September 17, 1837.

¹⁵⁹ Wiriot, *L'enseignement clinique*, p. 188; Ackerknecht, *Medicine*, pp. 105-107, 167-168.

in Paris, rated Andral's clinics superior to Louis's.¹⁶⁰ Mason Warren attended his lectures on theory and practice of medicine and purchased his acclaimed *Clinique médicale* as well as nine volumes of his medical dictionary, describing the latter as "... almost a library in themselves."¹⁶¹

Within a month of his arrival in Paris in May 1831, James Jackson had become an admirer "... of this great pathologist both on account of his clinical visits, his written observations and his lectures and also for his urbanity and true kindness of manner. . . ." ¹⁶² His admiration increased as he translated portions of the *Clinique*. Andral he held superior to Louis in interpreting evidence and more imaginative in formulating general principles.¹⁶³ By 1837 Andral's reputation had risen even with French students.¹⁶⁴

While eclecticism came to dominate the Paris school after 1830 and Andral's fame spread, that of his colleague at La Pitié, Pierre Charles Alexandre Louis, grew more rapidly, especially with Americans. "... there is none so well known with us and so highly esteemed. . . ," wrote J. C. Warren in 1837.¹⁶⁵ Two years later Gibson commented that "... of all the physicians of Paris there is no one, perhaps, at this moment who occupies more elevated ground than Louis." ¹⁶⁶ Certainly no clinician figured more prominently in Americans' accounts of their Parisian medical experiences.

Most of Louis's career¹⁶⁷ was spent in the hospitals although, unlike Leon Rostan, Bouillaud, and Chomel, he never passed through the *internat*. Forsaking private practice, he devoted seven years to research in Chomel's wards at La Charité. The result was important books on phthisis and on typhoid fever.¹⁶⁸ In 1829 at the age of forty-two he

¹⁶⁰ JP, July 27, 1831.

¹⁶¹ JMW, January 1, 1833; cf. also his letters of November 5, 17 and December 14, 1832.

¹⁶² JP, June 29, 1831.

¹⁶³ *Ibid.*, undated fragment; internal evidence suggests late 1831.

¹⁶⁴ JCW.

¹⁶⁵ *Ibid.*

¹⁶⁶ Gibson, *Rambles*, p. 83.

¹⁶⁷ The most useful accounts are: Pierre Astruc, "Louis," in *Les biographies médicales* (Paris, 1933), vol. 7, pp. 245-260; E. J. Woillez, *Le docteur P.-C.-A. Louis, sa vie, ses oeuvres (1787-1872)* (Paris, 1873); Paul Delaunay, "Les doctrines médicales au début du XIX^e siècle, Louis et la méthode numérique," in E. Ashworth Underwood, ed., *Science, Medicine and History* (London: Oxford Univ. Press, 1953), II, 321-330; Ackerknecht, *Medicine*, pp. 102-104; and Louis's *Examen de l'examen de M. Broussais* (Paris, 1834), pp. 3-5.

¹⁶⁸ *Recherches sur la phtisie* (Paris, 1825); *Recherches anatomiques, pathologiques*

acquired a *service* of several wards at La Pitié and began his "free" clinic on thoracic diseases which ran from November through April. From seven-thirty to ten o'clock every morning he visited his *salles*, commenting on cases and allowing students to examine the patients. Meticulous autopsies of one and a half to two hours followed the visit. Every other day he lectured in the amphitheater.¹⁶⁹ He was never a member of the Faculté losing a *concours* in 1831 for the chair of *clinique interne*.¹⁷⁰ In 1837 he moved to the Hôtel Dieu.

What impression did Louis make on American students in the 1830s and why? Not all followed him or became his admirers. Ashbel Smith who was in Paris in January and February 1832 did not even mention him,¹⁷¹ nor did James Lawrence Cabell in 1837.¹⁷² Wolfley praised his careful autopsies, thought him a "valuable observer," but found nothing new in his clinic and rated him "too diffuse" as a lecturer.¹⁷³ Because he lacked oratorical brilliance, specialized, and his hospital was situated too far from the medical school, he attracted few French students at first,¹⁷⁴ but by the time he left La Pitié his lectures were well attended.¹⁷⁵ Mason Warren noted that "with Louis knowledge comes slowly & . . . with much reading as it is supposed in his observations that every body who follows him is acquainted well with the subject. On this account Louis is not a good person for beginners in medicine to attend & in fact his chief students are English & Americans who have most of them their degrees of M. D. . . ." ¹⁷⁶ "Jackson he treats like a son & is perhaps on the most intimate terms with him." ¹⁷⁷

How James Jackson, Jr., became Louis's disciple and favorite American pupil illustrates the appeal of the austere Frenchman's personality and teaching for some Americans. It was a significant personal and intellectual relationship too, because Jackson along with Gerhard and Pennock were Louis's first American students and their enthusiasm converted others

et thérapeutiques sur la maladie connue sous les noms de fièvre typhoïde, etc. (Paris, 1829).

¹⁶⁹ JMW, March 23, 1834.

¹⁷⁰ Cf. *Gaz. méd. de Paris*, (note 149 above).

¹⁷¹ Five letters from Paris between January 1 and February 25, 1832, in Ashbel Smith Papers (University of Texas Library). Hereafter cited as Smith.

¹⁷² JLC, *passim*.

¹⁷³ Wolfley, pp. 533-534.

¹⁷⁴ Wiriot, *L'enseignement clinique*, p. 187.

¹⁷⁵ JMW, January 26, 1835.

¹⁷⁶ *Ibid.*, December 12, 1832.

¹⁷⁷ *Ibid.*, April 19, 1833.

of their countrymen who came to Paris. Henry Ingersoll Bowditch and Mason Warren, for example, abandoned their original plans to spend a winter in Britain in order to follow Louis's *clinique*.¹⁷⁸

Scion of a distinguished Bostonian medical dynasty—his father taught at Harvard Medical School—Jackson was twenty-one when he arrived in Paris to continue medical studies already launched at home under his father's tutelage. Immediately he began following Louis and Andral at La Pitié where "morbid anatomy is pursued with ardour and precision."¹⁷⁹ Louis, whose books he had read, impressed him as one of the best observers of disease in Paris, ". . . very exact, but not very eloquent."¹⁸⁰ Indeed for months after his first encounter he rated Andral the superior clinician. Yet he stayed with Louis partly because his visits attracted few students and one could examine patients more thoroughly under the guidance of "the first man in Paris for the Steth (oscope). . . ." ¹⁸¹

The more Jackson listened to and watched Louis the more his respect and affection for him grew. Louis, he discovered, was weak in therapeutics, satisfied with an accurate diagnosis. But because he had observed so many cases, carefully tabulating and comparing symptoms with lesions he was, in Jackson's view, the best diagnostician in the world. Louis taught the young American the importance of obtaining complete, detailed medical histories, including the condition of the organs prior to disease, and of making minute examinations of *all* organs in autopsy. From Louis and his own researches in Louis's wards, Jackson acquired a passion for morbid pathology, caution in generalizing from too few cases, and contempt for those, like Broussais, who did. Louis's contention that typhoid fever—called continued fever at Massachusetts General Hospital—had a distinct anatomic character, namely lesions in the Peyer's glands, convinced Jackson and led him to speculate that there were different kinds of fevers. Louis's statistical method suggested a way of testing remedies and thus of improving therapeutics. Finally, Louis exemplified the dedicated scientist scorning private gain and observing facts to arrive at the truth.¹⁸²

¹⁷⁸ Bowditch, I, pp. 62-64 (letter dated October 29, 1833); JMW, April 13, 1833.

¹⁷⁹ JP, May 30, 1831.

¹⁸⁰ *Ibid.*, July 27, 1831.

¹⁸¹ JP, May 30, 1831.

¹⁸² This paragraph was distilled from Jackson's letters from Paris. For a fuller account see Jones, "An American medical student."

The ghastly experience of the cholera epidemic in the spring of 1832 brought teacher and student closer together. Rejecting his father's anguished pleas to leave Paris and reassuring him that the disease was not contagious, Jackson remained in the city, resolved to "... establish some important data for rational treatment."¹⁸³ He arose at five o'clock and walked two and a half miles from "the healthy side of the river" (the Right Bank) to La Pitié where he spent most of the day. "Imagine my situation at the side of the greatest pathologist in Europe who has made morbid anatomy a special study whom I revere and love and to whom my gratitude is equalled only by my respect... in one month or less I may examine with care and accuracy 30 or 40 bodies going over every inch of the mucous membrane of the alimentary canal, listening to his remarks, copying his descriptions, receiving a kind and attentive answer to every doubtful question which presents itself to my mind."¹⁸⁴ Jackson took notes on about sixty cases and made thirty autopsies before going to Britain to rest and prepare his research for publication. Upon his return Louis gave him free access to his wards. "What do you think he begs of me to do," wrote a pleased Jackson, "... he says I am made for medical observation and should not devote myself to practice, but spend the next five years at least in observation at a Hospital collecting cases and writing without seeing a single patient."¹⁸⁵

"Louis' reputation is spreading—truth gains," commented Jackson as his departure neared, "... Andral has the greatest reputation and will have for some years, but he bows to the true Master of the Age, and my joy is that the Master of the Age takes my arm, treats me with familiarity. . . ."¹⁸⁶ No wonder the young man wept as he bade farewell to his "second father" whom he was never to see again.

James Jackson's admiring friends—"It is not a mere individual that we have lost," wrote Holmes upon learning of Jackson's death in 1834, "for he was one of those on whom it rests to transfer the labours of a new age from the old world to our own, undoubtedly the best trained and the most ardent mind in the circle to which he belonged."¹⁸⁷—shared his regard for Louis. "A strict method of examination and observation & a knowledge of pathological anatomy are the chief things to be learned

¹⁸³ JP, April 25, 1832.

¹⁸⁴ *Ibid.*, April 5, 1832.

¹⁸⁵ *Ibid.*, April 25, 1832.

¹⁸⁶ *Ibid.*, April 20 (?), 1833.

¹⁸⁷ HP, London, May 21, 1834.

from following Louis," commented Mason Warren.¹⁸⁸ From the same student: "By going thus thoroughly . . . with his examination Louis has been able to throw great light on many diseases where pathology has been hitherto unknown & of course destroy many of the absurd doctrines that have crept into medicine."¹⁸⁹ But, he continued, the immense labor Louis had expended in compiling his statistical tables is ". . . almost enough to affrighten those who would wish to follow in his steps. . . ." ¹⁹⁰ Holmes put it simply: Louis taught us the love of truth.¹⁹¹

He also gave them his friendship. Tall, spare, of "Dantesque solemnity" and "rigidness of intellect and style," ¹⁹² Louis soon won Americans by his kindness as well as his teaching. Wrote Mason Warren: ". . . though in his wards Louis has something very stern & something even repulsive, yet when brought into more intimate relations with him this is entirely dissipated & he is found to be a *très bon garçon*." ¹⁹³ Jackson he loved like a son. To the young American's memory Louis dedicated his response to Broussais in 1834.¹⁹⁴ And to Americans who called on him Louis always spoke of *pauvre* Jackson with tears in his eyes.¹⁹⁵ Gerhard he commended as *un médecin habile*.¹⁹⁶ And when Henry Bowditch, who did as much as any of his students to spread his reputation in America, fell sick Louis visited him.¹⁹⁷

In Europe, noted James Jackson, medical men became distinguished because they specialized; this was not done in America.¹⁹⁸ Specialties developed and became more diversified in Paris during the 1830s and were taught in the "free" clinics. Paul Dubois, *professeur titulaire de clinique d'accouchements*, began clinical instruction in obstetrics in 1834 at the new Hôpital des Cliniques, but his *service* was limited to sixteen beds so most students continued to take private lessons from midwives. Down to 1839 the teaching of pediatrics at *Enfants Malades* consisted of

¹⁸⁸ JMW, November 22, 1833.

¹⁸⁹ *Ibid.*, March 23, 1834.

¹⁹⁰ *Ibid.*, April 8, 1834.

¹⁹¹ Oliver Wendell Holmes, "Some of my early teachers," in *Medical Essays, 1842-1882* (Boston-New York, 1892), p. 436.

¹⁹² Alfred Stillé to Henry I. Bowditch, January 4, 1873 in Bowditch Papers (Countway Library).

¹⁹³ JMW, December 20, 1834.

¹⁹⁴ *Examen de l'examen de M. Broussais* (Paris, 1834).

¹⁹⁵ Gibson, *Rambles*, pp. 84-85.

¹⁹⁶ *Ibid.*

¹⁹⁷ Bowditch, I, pp. 38-39 (letter dated January 27, 1833).

¹⁹⁸ JP, January 15, 1832

L. B. Guersant's visits and lectures. After that date Paul Guersant and Jules Guérin organized regular instruction. Guérin's orthopedic clinic, patterned after his private one at Passy, attracted many foreigners. So too did Philippe Ricord's "free" clinic in venereal diseases at the Hôpital des Veneriens. Clinics in psychiatry resumed at Salpêtrière and Bicêtre in this period, the former under Guillaume Ferrus, a student of Pinel, the latter under two of Esquirol's pupils, Jules Baillarger and Jean-Pierre Babret. Dermatology continued to be the specialty of St. Louis under Alibert's successors. Civiale, as previously mentioned, made the Necker famous for urology. Although all surgeons operated on the eye and Velpeau lectured on its diseases, ophthalmology did not become a specialty until Jules Sichel obtained a *salle* at St. Antoine and began to teach. In 1836 he founded his famous private clinic.¹⁹⁹

Besides Louis, an expert in thoracic diseases, and Civiale, other specialists also impressed Americans. Ricord's experiments on the inoculation of "venereal virus" from one point of the body to another and his treatments drew Mason Warren many times to the Veneriens.²⁰⁰ Valentine Mott studied with Guérin for three years learning new techniques of orthopedic surgery.²⁰¹ And Sichel's thrice-a-week "consultations," i. e. examinations of patients in his dispensary, attracted the first of many Americans who would be introduced to ophthalmology in Paris.²⁰²

Americans appreciated the chance to learn about subjects not taught at home under teachers whose professional careers had been devoted to their specialties. But students reacted differently to the prospect of becoming specialists themselves. Inspired by Louis's example, increasingly confident of his skill as a diagnostician and observer, James Jackson became totally absorbed in research. He pled with his father to allow him to become a pathologist, spending five more years studying diseases without practicing medicine.²⁰³ Although he admired Civiale, Louis, Amussat,

¹⁹⁹ Wiriot, *L'enseignement clinique*, pp. 193-203; Ackerknecht, *Medicine*, ch. XIV.

²⁰⁰ JMW, April 29; May 6, 19, 1833.

²⁰¹ Mott, *Travels*, pp. 54-56; Cf. Robert W. Hooper, Mss journal of trip to Europe (April, 1833-June, 1835) 4 vols. (Boston: Private possession of Mrs. Ward Thoron). Vol. IV contains entries from Paris for the period October 1834 to June 1835. Hooper attended Guérin's private clinic in May 1835. Hereafter this source will be cited as Hooper, *Journal*.

²⁰² JMW, January 1, March 14, December 14, 1833; February 22, 1834; January 26, March 22, 1835; Hooper, *Journal*, March 1835.

²⁰³ JP, January 15, February 17, May 3, September 12, 1832; January 16, February 22, 1833.

and Sichel, and later won fame for his plastic surgery, Mason Warren while he was in Paris became sceptical of specialists. "... I have often had reason to verify the justness of a remark made in one of your letters that care should be taken in attending to specialties, that the general medical attainments should not be neglected. In fact you see some of these men pronouncing a disease a rheumatic scrofula, catarrhal ophthalmic who you doubt much whether they are competent to pronounce on the existence of any one of the diseases in other parts of the body. ..." ²⁰⁴

While not all Americans shared this view of specialists and specialties, few dissented from Warren's judgement that among Parisian clinicians and surgeons "it seems to be more an object to study the natural history of disease and to perform an operation beautifully & quickly than to save the life of the patient." ²⁰⁵ More than one American echoed Mott's complaint that French physicians were more concerned with diagnosis and prognosis than with therapeutics. ²⁰⁶ In Paris, all agreed, one could learn a great deal about the symptoms, diagnostic signs, course, and effects of some diseases, but little of their causes and of how to effectively treat them. ²⁰⁷

Yet some progress was being made during the 1830s. ²⁰⁸ Mortality rates declined. Broussais's teachings were challenged and partly discredited. Accepted treatments such as blood-letting were tested and new agents tried. Louis's disciples, all the while, insisted with some truth that more effective therapeutics depended upon accurate knowledge of specific diseases. ²⁰⁹ And that knowledge, they felt certain, was increasing.

For two Americans' appraisals of French therapeutics let us hear again from those diligent medical students James Jackson, Jr., and Mason Warren. Both had been taught by their fathers before going abroad. Since they visited London and Edinburgh they could, and did compare French practice with English and American. More importantly, both believed, in spite of their admiration for certain aspects of the Parisian

²⁰⁴ JMW, January 26, 1835.

²⁰⁵ *Ibid.*, April 13, 1833.

²⁰⁶ Mott, *Travels*, p. 45.

²⁰⁷ See, for example, JP, June 8, 1831; JLC, January 28, 1837. Jackson noted that no one was interested in heart diseases in Paris.

²⁰⁸ Ackerknecht, *Medicine*, pp. 17 (on mortality rates), ch. XI on therapeutics. See also the *Gaz. méd.* for reports of treatments tried in the hospitals.

²⁰⁹ See, for example, Bartlett's *Essay* and Alfred Stillé, *Elements of General Pathology* (Philadelphia, 1848), 2 vols. I, 25-48.

medical world, that healing the sick was the chief object of medical knowledge and skill.

"I had read of French practice and heard of it but I had not the slightest conception how little they are acquainted with the science of therapeutics," commented Jackson shortly after his arrival.²¹⁰ A correct diagnosis was sufficient to satisfy Louis.²¹¹ Andral, James's other idol, confided that because of Broussais's contention that purgatives intensified gastro-enteritis both he and Louis were reluctant to use them.²¹² "It is an every day affair," wrote Jackson, "to hear a patient say he has been captive for 4 or 5 days and yet no means are taken to obviate it—on the other hand anything like a diarrhea . . . is immediately met by leeches to the abdomen or anus. A Frenchman may be known hereafter anywhere on the globe by the leech scars on his abdomen." ²¹³

Yet experimentation with remedies was going on. To the delight of his patients and himself Andral started prescribing purgatives²¹⁴ During the cholera epidemic physicians at the Hotel Dieu desperately tried different remedies but with little success.²¹⁵

Absorbed as he was in his medical studies Jackson never ceased to reflect upon the shortcomings of French therapeutics and to contemplate means of improvement. He criticized the tendency to assume that every disease could be explained by pathological anatomy or derangement of the nervous system.²¹⁶ The prevailing uncertainty about remedies he deplored. Could medicine acquire the precision of the natural sciences, he mused?²¹⁷ Diagnosis, he came to acknowledge, was not enough.²¹⁸

From this situation Jackson sought a way out. His search is one of the most interesting themes in his letters from Paris because the young man realized that even though he was learning much about diseases his knowledge made him no more competent to restore patients to health. His modest solution to this impasse was expanded pathological research. James never considered the possibilities of the emerging chemical pharmacology. Pathology, he asserted, must consider the causes of

²¹⁰ JP, June 26, 1831.

²¹¹ *Ibid.*, n. d. (late 1831 or early 1832).

²¹² *Ibid.*, June 29, 1831.

²¹³ *Ibid.* June 29, 1831.

²¹⁴ *Ibid.*

²¹⁵ *Ibid.*, April 1, 5, 1832.

²¹⁶ JP, March 1, 1832.

²¹⁷ *Ibid.*, January 16, 1833.

²¹⁸ *Ibid.*, January 25, 1833.

diseases, not just effects.²¹⁹ And only observation and systematic collection of facts can produce truth in both pathology and therapeutics.²²⁰ He projected a society of trained observers who would collect case histories of patients under their care, then at periodic meetings, compare cases and formulate general laws.²²¹ The effectiveness of remedies, he urged, could be tested by statistical means.²²²

Following his visit to Britain Jackson concluded that treatment in Edinburgh was no different from treatment in Paris²²³ and that, since English and American practice were essentially the same, he could study therapeutics with greater profit at the Massachusetts General Hospital under his father.²²⁴

Mason Warren, too, felt he could learn little about therapeutics in Paris. Scattered through his letters are descriptions of treatments he witnessed and reports on claimed results, but few words of praise. For example, Lisfranc used leeches, frictions, bleeding, then surgery to treat a "corps étranger" in the knee. The patient died. Warren wrote his father: "It showed me that the patient's strength was too much diminished after the operation from the tremendous bleeding ordered from fear of inflammation (sic) which might take place. This affords a very great contrast with that . . . practiced by yourself."²²⁵ Only Louis's pamphlet on blood-letting, a second edition of which was published in 1835, impressed Warren: "The facts corrected go to prove that bleeding in disease seldom or never strangulates the disease as supposed by so many writers & that though we frequently find the general symptoms ameliorated yet the march of the local disease is never arrested. . . . The facts collected relate chiefly to pneumonia, erysipalis, angina and are very hard to digest for those who are enthusiastic in therapeutic measures."²²⁶

In the foregoing pages some American doctors have given their impressions of the Parisian medical world in the 1830s. By telling their countrymen of the advantages of studying medicine in the French capital they, we suggest, stimulated others to go abroad. At the end of the decade (1839) William Gibson wrote that until his visit he had neither

²¹⁹ *Ibid.*

²²⁰ *Ibid.*, February 22, 1833.

²²¹ *Ibid.*, November 26, 1832.

²²² *Ibid.*, January 16, 1833.

²²³ *Ibid.*, July 15, 1832.

²²⁴ *Ibid.*, September 12, 1832.

²²⁵ JMW, January 4, 1835.

²²⁶ *Ibid.*, February 12, 1835.

a clear appreciation of the opportunities for medical study which Paris afforded nor why "... pupils, after having completed their studies in this country (the United States), and sailed for Europe in quest of additional information, should, almost to a man, take up their quarters exclusively, in the French metropolis, and never think, afterwards of attending the lectures and walking the rounds of the English, Scotch, and Irish colleges and hospitals." ²²⁷

IV

"Here I am in Paris in accordance with a desire which possessed me for years. When in America I sighed as you know after opportunities for improvement; here on the contrary I have only to regret that I can avail myself of but few comparatively of the almost innumerable facilities which this metropolis affords. . . . I have not time in the 24 hours. . . ." wrote Ashbel Smith in 1832.²²⁸ "My greatest difficulty in employing my time is the selection of courses. There is so much offered and so much that I would like to undertake that until now I have been skipping from place to place unable to give the preference to any one. . . ." confessed James L. Cabell in 1837.²²⁹ How did Smith, Cabell, and their countrymen go about studying medicine in Paris?

Experiences as well as professional backgrounds varied. As has been pointed out, some were established practitioners; others were recent graduates from medical schools. Some like Smith, Lewis Wolfley, and John Young Bassett remained but a few months in the city; while Robert Hooper, Mason Warren, James Jackson, Henry Bowditch, William Gerhard, George Cheyne Shattuck,²³⁰ and Oliver Wendell Holmes stayed around two years. Wolfley and Mason Warren concentrated on surgery; Jackson, Casper Pennock, and Bowditch on observing diseases.

Then too, the Parisian medical world itself changed during these years. Celebrities like Dupuytren died (1835). Broussais's reputation and influence declined while the fame of Velpeau, Louis, and Andral increased. Still the physical facilities and the opportunities Americans described in

²²⁷ Gibson, *Rambles*, pp. 63-64.

²²⁸ Smith, February 23, 1832.

²²⁹ JLC, January 28, 1837.

²³⁰ After obtaining his M.D. from Harvard in 1835, Shattuck studied in Paris until 1838. See his letters from Paris between June 6, 1836, and February 6, 1838, in the Shattuck Papers, vols. 13-16 (Mass. Hist. Soc.) and his manuscript notes on cases observed in Louis's ward in 1837 (Countway Library). For a biographical sketch see K-B, p. 1040.

the preceding section of this paper remained so the outlines of a common experience can be extracted from their accounts.

Where one lived depended upon the purpose and length of one's visit. Medical tourists found rooms on the Right Bank near the Palais Royal and the Tuileries gardens. From there they ventured to such popular attractions as the theaters and opera, the Louvre, Père Lachaise cemetery, the newly completed (1836) Arc de Triomphe, and Notre Dame. Their medical interests took them across the Seine to the hospitals, medical school, dissecting rooms, lectures, medical museum, instrument makers, booksellers, and sessions of the learned societies.

Students, on the other hand, rented rooms or lived in pensions near the medical school. Cabell "obtained board and lodging with a French family in the Place de l'Ecole de Médecine, a situation perhaps as convenient as any in Paris for one attending the Hospitals. I was quite willing to pay the rather high charges of 150 francs (about \$30) a month in consideration of the advantages which I supposed I would derive from living with a French family." ²³¹ The Bostonians Jackson, Bowditch, Warren, and Copley Greene lodged together at a hotel on the Rue Monsieur le Prince.²³²

Learning French absorbed the energies of most Americans, except the men from New Orleans, during their first weeks in Paris. Jackson paid a young physician a franc a day to tutor him and started immediately to follow the clinics. After a month he was able to discuss medical questions with Andral.²³³ James advised his countrymen to follow the same procedure. After all much could be learned merely by observing. Cabell was disappointed to discover that nearly all his fellow boarders were Americans and "... some of them being about to quit Paris are no longer anxious to restrict themselves to the French language; the consequence is that we are obliged to speak English more than is useful to newcomers." ²³⁴

Lack of proficiency in French did not keep serious students from establishing daily routines. Here are some typical ones. Ashbel Smith spent his days

in attendance at the hospitals, which commences at 6 A. M.—in seeing others perform surgical operations on the living—in repeating these operations, myself, on the

²³¹ JLC, January 28, 1837.

²³² JP, October 18, 1832.

²³³ *Ibid.*, June 26, 1831.

²³⁴ JLC, January 28, 1837.

dead body; in dissecting—in hearing lectures on the various Sciences, Medicine, etc.—I am engaged at least 8 generally 10 hours daily—I breakfast at 10 A. M. on bread and milk—and dine substantially at 6 P. M.—As it is always morning till one has dined, I am frequently bidden a “good morning” after dark in the evening.²³⁵

By January 1833—he arrived in Paris the preceding September—Mason Warren’s schedule was as follows:

I commonly rise a little after six. The servant comes in every morning to wake me and light my candle. From 6 until 8 I attend Chomel at Hotel Dieu, a man at present very celebrated for his knowledge of diseases of the lung. At 8 Dupuytren commences his visit which lasts one hour, that is till 9 and he afterwards lectures and has his consultations and operations which occupies the time untill 11. I then breakfast and attend Richerand on Surgery his lecture being between 12 and 1. From 3 to 4 I attend either Marjolin on Surgical Pathology or Andral, they lecturing alternately every other day. The evenings are occupied in reading, etc.²³⁶

Willard Parker left his teaching position in Cincinnati to spend from April through June, 1837 in “the city to which I have looked with so much longing in relation to my profession.” His diary is a typical account by a medical tourist. Besides seeing the sights, he followed Louis, Chomel, and Cruveilhier and witnessed Magendie, Velpeau, Roux, and Lisfranc. He attended lectures on auscultation at La Pitié, dissected at Clamart, took a course on operative surgery, roamed the Jardin des Plantes, and bought books and specimens for his college.²³⁷

Private lessons occupied much of the student’s day. Jackson, Pennock, and Gerhard visited La Pitié three afternoons a week to examine morbid specimens “. . . exactly and carefully comparing authorities with the subject before us . . . afterwards carrying home such portions as require minute investigation.”²³⁸ In Robert’s course in operative surgery, Wolfley performed all operations twice on the subject.²³⁹ Under Amussat’s direction Mason Warren executed different operations on living animals: “I dissected yesterday a dog which we killed after the different arteries of the body had been treated for four days with different methods of torsion. ligature, Scarpa’s method. . . .”²⁴⁰ Three times a week Bowditch

²³⁵ Smith, February 23, 1832.

²³⁶ JMW, January 16, 1833.

²³⁷ Rübrah, “Willard Parker,” *passim*.

²³⁸ JP, February 3, 1832; Osler, *An Alabama Student*, p. 206.

²³⁹ Wolfley, p. 159.

²⁴⁰ JMW, May 19, 1833.

and Warren studied skin diseases at St. Louis. "The Interne of the Hospital calls in a number of patients who we examine & he explains the disease, its diagnostic signs and treatment. . . ." ²⁴¹

Some of Louis's American students had an additional opportunity to improve their skills as observers of diseases. ²⁴² At weekly meetings of the *Société médicale d'observation* members ²⁴³ read papers based upon cases observed in Louis's wards, then heard criticism of their methods and conclusions from both Louis and their fellow students. ²⁴⁴ Jackson, for example, discussed pneumonia in tubercular patients incorporating his own observations on bronchial expiration. ²⁴⁵ This experience, all agreed, helped one to analyze and to present cases more accurately and fully. ²⁴⁶

V

The two hundred and twenty-two doctors who visited Paris in the 1830s were an important link between the Parisian medical world and American medical culture. In the preceding sections of this essay we have drawn their statistical profile, suggested why they went to France, presented their impressions of medical Paris, and described how they pursued their studies. Here our purpose is to indicate some of the ways these doctors, upon their return home, transmitted French medicine to the United States. We are not concerned with the results of their efforts. French influence on American medicine is the proper subject of an exhaustive study which takes the entire forty years of the "Paris period" as its chronological framework and which examines many more individuals' biographies than can be done in this paper. Our modest aim is to merely identify points

²⁴¹ *Ibid.*, November 27, 1832.

²⁴² As examples of the sort of case histories students wrote see, in addition to Shattuck's cited in note #230 above, those of James Jackson on cholera in Jackson, *A Memoir*, and Oliver Wendell Holmes's mss notes on Louis's *Cliniques* in 1834-1835 (Countway Library).

²⁴³ James Jackson, along with some of Louis' Swiss students helped to organize the society, cf. JP, February 27, March 18, 24, 1832. Americans listed as members in the *Memoirs* of the *Société médicale d'observation de Paris*, vol. I (Paris, 1837) were: William Wood Gerhard, Henry I. Bowditch, Thomas Stewardson, and Oliver Wendell Holmes. Vol. II (Paris, 1844) included the above plus William Power, George Cheyne Shattuck, Alfred Stillé, Norris, and Keane.

²⁴⁴ Besides Jackson's accounts see Bowditch, *Brief Memories of Louis and Some of His Contemporaries in the Parisian School of Medicine of Forty Years ago* (Boston, 1872), pp. 11-14; Bowditch, I, 47-48; and HP, September 19, October 6, 1834

²⁴⁵ JP, April 29, 1833.

²⁴⁶ HP, October 6, 1834.

of diffusion, so to speak, without assessing the impact of what was diffused.

As recounted earlier, Americans in private letters and published works described Parisian medical facilities, personalities, and teaching and thus alerted their countrymen to the opportunities for professional improvement which the city offered. They also acquired the tools of the trade: books, instruments, and specimens. Perhaps even more important, they were partly responsible for French medical treatises reaching a wider audience in the United States. Following La Roche's European trip in 1828-1829 the number of French works received and reviewed by the *North American* increased sharply. Men who studied in Paris in this period translated French medical books, or, as in the case of Valentine Mott with Velpeau's treatise on operative surgery,²⁴⁷ otherwise prepared them for dissemination to American readers. James P. Jervey translated Amussat's lectures on diseases of the prostate;²⁴⁸ Alfred Stillé, Andral's *Pathological Haematology*;²⁴⁹ A. Sidney Doane, works by Bayle, Blandin, Dupuytren, Lugol, Maygrier, and Ricord;²⁵⁰ James Kitchen, Bouillaud;²⁵¹ Henry

²⁴⁷ Alfred Armand Louis Marie Velpeau, *New Elements of Operative Surgery*. Translated by P. S. Townsend, under the supervision of and with notes and observations by Valentine Mott. 1st Amer. ed. from the last Paris ed. (New York, 1847), 3 vols. In his preface, Mott cited the need for a standard work on surgery in English, praised the practical value of the work, and recommended it as a textbook. For an historian's estimate of the book's importance see J. Chalmers Da Costa, "The French school of surgery in the reign of Louis Philippe," *Ann. Med. Hist.*, 1922, 4: 78.

²⁴⁸ Jean Zulema Amussat *Amussat's lectures on retention of urine caused by strictures of urethra and on diseases of the prostate*. Ed. by A. Petit. Transl. from the French by James P. Jervey, M. D. (Philadelphia, 1840). James Postell Jervey (1808-1875) received his M. D. from the Medical College of South Carolina in 1831 then spent two years in Paris. In 1851 he lectured on comparative anatomy at the Medical College. Cf. K-B, p. 623.

²⁴⁹ Gabriel Andral, *Pathological Haematology: An essay on blood in disease*. Transl. from the French by J. F. Meigs, M. D. and Alfred Stillé, M. D. (Philadelphia, 1844).

²⁵⁰ Antoine Laurent Bayle, *Elementary Treatise on Anatomy*. Transl. from the 4th ed. of the French by A. Sidney Doane. (New York, 1837); Philippe-Frederic Blandin, *Treatise on Topographical Anatomy, etc.* (New York, 1834); Guillaume Dupuytren, *Clinical Lectures on Surgery* (New York, 1833); Jean Guillaume Auguste Lugol, *Researches on Scrofulous Diseases* (New York, 1845); J. P. Maygrier, *Midwifery Illustrated* (New York, 1835); Philippe Ricord, *A Practical Treatise on Venereal Diseases, etc.* 2nd. ed. (New York, 1844). Doane went to Paris after obtaining his M. D. from Harvard in 1828. In 1839 he was Professor of Physiology in the Medical School of the University of New York. Cf. Packard, "Foreign influences," p. 1032 and K-B, p. 316.

²⁵¹ Jean-Baptiste Bouillaud, *New Researches on Acute Articular Rheumatism in General, etc.* (Philadelphia, 1837). James Kitchen, Jr., graduated from Pennsylvania

H. Smith, Civiale;²⁵² Josiah Clark Nott, Goupil;²⁵³ William Wood, Lallemand;²⁵⁴ Shattuck, Bowditch, and Thomas Stewardson, Jr., some of Louis's writings;²⁵⁵ and Gunning S. Bedford, Maygrier.²⁵⁶ About half of the French works on the list of medical books which Robley Dunglison recommended to students were translated by Americans who had spent time in France.²⁵⁷ Englishmen accounted for the other translations.

At least sixty-seven Paris trained men taught in American medical schools either before or after studying in France. The University of Pennsylvania faculty included William Gibson, William Gerhard, Jacob Randolph, George Norris, William Horner, and Henry Smith.²⁵⁸ J. C. Warren, Bowditch, Henry J. Bigelow, Shattuck, and J. B. S. Jackson were active at Harvard.²⁵⁹ In St. Louis, Pope, Linton, and Josephus Wells Hall²⁶⁰ stressed clinical instruction, the fundamental importance of anatomy, and recommended such "foundation writers" as Velpeau,

in 1822 then studied in Paris. Cf. Files of Alumni; David Bailie Warden Papers (Manuscripts Division, Library of Congress), 22 vols., VIII.

²⁵² Jean Civiale, *Of the Medical and Prophylactic Treatment of Stone and Gravel* (Philadelphia, 1841). Henry Hollingsworth Smith graduated from Pennsylvania in 1837 then studied in Europe eighteen months before 1841. He was Professor of Surgery at Pennsylvania from 1855 to 1871. Cf. File of Alumni; K-B, p. 1068.

²⁵³ Jean Martin Auguste Goupil, *Exposition des principes de la nouvelle doctrine médicale*, etc. Transl. from the French by Josiah C. Nott to which is appended a short essay on leeches by the translator (Columbia, S.C., 1831). Nott graduated from Pennsylvania in 1827, studied in Paris in 1835, founded a medical school at Mobile, and was Professor of Anatomy at the University of Louisiana. Cf. K-B, pp. 856-857; Packard, "Foreign influences," pp. 1024-1025.

²⁵⁴ Claude-François Lallemand, *On Involuntary Seminal Discharges* (Philadelphia, 1839). Wood studied two years in Paris after receiving his M.D. from Bowdoin in 1833. Cf. *Transactions* of the Maine Medical Association, 1900, 13: pp. 514-516.

²⁵⁵ For these works see pp. of this paper. Bowditch graduated from Harvard in 1832 then spent two years in Europe, mostly in Paris. In 1859 he became Professor of Clinical Medicine at Harvard. Cf. DAB, 1929, 2: pp. 492-494; Thomas Stewardson Jr. graduated from Pennsylvania in 1830 then studied in Paris between 1832 and 1834. Cf. File of Alumni; Hinsdale, p. 40.

²⁵⁶ J. P. Maygrier, *The anatomist's manual*, etc. 2 vols. (New York, 1832). Bedford studied in Paris in 1829-1830 then taught at the Medical College of South Carolina and at New York University. Cf. K-B, p. 88; Norwood, *Medical Education*, p. 121; Packard, "Foreign influences," p. 1026.

²⁵⁷ Dunglison, *The Medical Student*, pp. 201-289.

²⁵⁸ Catalogues of the University of Pennsylvania (1830-1831 to 1868-1869).

²⁵⁹ Norwood, *Medical education*, ch. XV.

²⁶⁰ Hall studied in Paris and in Rome for three years after graduating from Transylvania in 1830. He held the chair of theory and practice of medicine at the Medical Department of Kemper College in St. Louis. Cf. Shankland, *Medical Education*, pp. 64-65, 67-68.

Cruveilhier, and Bichat to their students.²⁶¹ Medical education in South Carolina owed much to Paris. Two of the seven original members of the faculty of the Medical College, founded in 1824, studied there: John Edwards Holbrook and Samuel Henry Dickson. Eli Geddings, a member of the first graduating class (1825) went to Paris, then, in the 1830s, succeeded John Wagner, another Paris alumnus, in the specially created chair of pathological and surgical anatomy.²⁶² More important, instruction in anatomy and in operative surgery was given by men who had acquired experience in the French capital. In 1835, for example, a Southern School of Practical Medicine opened its doors in Charleston. The faculty included Thomas L. Ogier, William T. Wragg, James P. Jervey, and Thomas M. Logan, all of whom had studied in Paris in the early 1830s as well as F. Wurdemann who was educated in Europe before 1834.²⁶³

The movement to raise the standards of American medical education had Paris-trained doctors among its leaders. Ferdinand Campbell Stewart, for example, chaired the committee on medical education of the American Medical Association. In 1849 the group compared American professional training with European systems of educating doctors. Certain features of the French medical curriculum drew praise, notably, the longer course with more subjects, the requirement of pre-medical education in the sciences; emphasis on clinical teaching and dissecting, more frequent and more comprehensive examinations. The committee also commended specialization, the *concours*, and the practice of the state paying the salaries of the professors.²⁶⁴

Some of Louis's American students were especially active in the 1830s in disseminating their beloved master's teachings in the United States. James Jackson, unfortunately, was not one. His death in 1834 Louis regarded as a great loss for science.²⁶⁵ But in the preface to his 1841 edition of his work on typhoid fever Louis cited, besides Jackson, other former students such as Shattuck, Holmes, Bowditch, and Enoch Hale of Boston; Gerhard, Stewardson, Pennock, Norris, and Stillé of Philadelphia; and William Power of Baltimore as among the first to recognize

²⁶¹ *Ibid.*, pp. 170, 179, 203.

²⁶² Waring, *Medicine in South Carolina*, pp. 71-76.

²⁶³ *Ibid.*, p. 87.

²⁶⁴ Report of Committee on Medical Education in *Transactions*, American Medical Association (1849), pp. 263-265, 272-279, 300-311, 337-352. P. C. Gaillard and A. L. Peirson were other members of the seven man committee who had studied in Paris.

²⁶⁵ See Louis to James Jackson, Sr., May 12, 1834, and Gerhard to Jackson, Sr., July 11, 1834, in Carton 3 of the James Jackson Papers (Countway Library).

the accuracy of his conclusions on the distinctive anatomical character of the disease.²⁶⁶ On the other hand, Louis's pupils and admirers obtained membership for their teacher in the Massachusetts Medical Society (1835), the Philadelphia College of Physicians (1835), and the Pathological Society of Philadelphia (1839).²⁶⁷

Six of Louis's books, more than of any other Parisian doctor, were made available to American readers through the efforts of his disciples. In 1836 appeared Bowditch's revised edition of an English translation of the *Recherches anatomico-pathologiques sur la phthisie*, a work James Jackson, Jr., had started to translate in Paris;²⁶⁸ Bowditch's own translation of *Recherches anatomiques, pathologiques et therapeutiques sur la maladie connue sous le nom de gastroenterite, etc.*; and an American translation of the *Recherches sur les effets de la saignée* with preface and appendix by James Jackson, Sr., in which he praised both the rigorous method and the results which his own research corroborated.²⁶⁹ Two years later translations of shorter works—Stewardson's of the *Recherches sur l'emphysema des poumons* and Bowditch's *De l'examen des maladies et la recherche des faits generaux* appeared in Dunglison's American Medical Library. And in 1839, five years before the French edition, Shattuck brought out his translation of the *Recherches sur la fièvre jaune de Gibraltar*. In his introduction he answered critics who charged that Louis merely counted. All physicians compare cases and note the frequency of symptoms, responded Shattuck. Louis is unique in the great care he takes in his observations; "he insists upon the importance of observation as no one else before him has done." ²⁷⁰

Louis's first three American students, Jackson, Gerhard, and Pennock

²⁶⁶ Louis, *Recherches anatomiques . . . sur la maladie connue sous les noms de fièvre typhoïde*, etc. 2d ed., 2 vols. (Paris, 1841), I, pp. xvi-xvii.

²⁶⁷ *Diplômes du Docteur P. Ch. A. Louis, membre de l'Académie de Médecine (1787-1872)* (Bibliothèque nationale [Paris]: Nouvelles acquisitions françaises. 23172).

²⁶⁸ Gerhard to James Jackson, Sr., Philadelphia, April 19, 1834, in Carton 3, Jackson Papers (Countway). Gerhard and James Jackson, Jr., saw the translating of Louis's works as a way to "...extend sound pathological views in America." The senior Jackson urged Gerhard to publish a translation calling the book valuable not for the treatment recommended nor for any new theory but because of the exact observations on both the living subject and the cadaver. The facts would provide a basis for prognosis from which remedies could be tried. Cf. James Jackson, Sr., to Gerhard, Waltham, Mass., September 4, 1834, in Carton 3 of the Jackson Papers.

²⁶⁹ For a discussion of the impact of the book on American medical thinking see Leon S. Bryan, Jr., "Blood-letting in American medicine, 1830-1892," *Bull. Hist. Med.*, 1964, 38: 516-529.

²⁷⁰ Introduction, p. xiv.

presented to American readers the results of their researches in Paris. Their terse, factual notes on cases of cholera were published even before the authors returned home.²⁷¹ And at the urging of the two Philadelphians,²⁷² the elder Jackson brought out his son's observations on emphysema, pneumonia, typhoid fever, and tuberculous infections.²⁷³ It was in this work, dedicated to Louis, that Jackson Sr. summarized and praised the Frenchman's numerical method.²⁷⁴

A few students, once they returned home, followed Louis's precepts in their own work. While complaining of the lack of research facilities, Gerhard, nevertheless, observed cases of fevers in the Philadelphia hospitals. He compared his own findings with Louis's and noted, as had Louis, that lesions in the Peyer's glands accompanied typhus, but not "remittent fever."²⁷⁵ In the preface to his *Diagnosis on Diseases of the Chest*, the last chapter of which was written especially for doctors having no access to a hospital, Gerhard publicly acknowledged his debt to Louis.²⁷⁶ Stewardson, too, emulated his Parisian teacher in his own researches on remittent fever.²⁷⁷ While Bowditch, in 1846, brought out a manual on physical diagnosis for students.²⁷⁸

A zealous disciple and one of the most energetic in disseminating Louis's teachings in Boston, Henry Bowditch realized the hope of his friend James Jackson, Jr.,²⁷⁹ and of Louis.²⁸⁰ In March 1835, within a year of his return from France, Bowditch helped to organize the Boston Society of Medical Observation. Its purpose was "collecting and reading

²⁷¹ William Wood Gerhard and Casper Wistar Pennock, "Observations on the cholera of Paris," *Am. J. Med. Sci.*, 1832, 10: 319-390; James Jackson, Jr., *Cases of Cholera Collected at Paris in the Month of April 1832 in the Wards of MM. Andral and Louis at the Hospital la Pitié* (Boston, 1832).

²⁷² Gerhard to James Jackson, Sr., Philadelphia, January 1, 1835, in Carton 3, James Jackson Papers.

²⁷³ Jackson, *A Memoir*.

²⁷⁴ *Ibid.*, pp. 58-72.

²⁷⁵ Gerhard to James Jackson, Sr., Philadelphia, January 1, 1835, in Carton 3, James Jackson Papers; Cf. Osler, "Influence," p. 166.

²⁷⁶ William Wood Gerhard, *On the Diagnosis of Diseases of the Chest Based upon the Comparison of Their Physical and General Signs* (Philadelphia, 1836).

²⁷⁷ Thomas Stewardson, Jr., "Observations on remittent fever founded upon cases observed in the Pennsylvania Hospital," *Am. J. Med. Sci.*, 1841, n. s. 1: 289-324.

²⁷⁸ Henry Ingersoll Bowditch, *The Young Stethoscopist, or the Student's Aid to Auscultation* (Boston, 1846).

²⁷⁹ See p. 52.

²⁸⁰ Louis to James Jackson, Jr., Paris, November 2, 1832 in Carton 3, James Jackson Papers.

detailed observations of cases of disease, as it presents itself at the Massachusetts General Hospital and in the city. . . ."²⁸¹ The constitution of the Parisian *Société médicale* became, with few alterations, that of the Boston group and Louis was elected the first honorary member. At the bi-weekly meetings remedies received little attention. Members strove to present clearly and concisely accurate and full observations.

Bowditch was an enthusiastic, talkative, and, judging from the minutes, a sometimes unbearably self-assured member. He kept a delighted Louis informed of the Society's work²⁸² and he lectured his colleagues on the Frenchman's methods and researches. At nearly every session the young man presented a case and criticized his colleagues for their imprecision and incompleteness. He tried to make the discussion as probing as those in Paris. In spite of, or perhaps because of Bowditch's efforts and the admission of others who had also studied in Paris²⁸³ the Society floundered through the 1830s and 1840s.²⁸⁴

Yet Louis's young disciples never ceased to proclaim the word. Few were as consistent and eloquent an advocate as Alfred Stillé, a Philadelphian who spent two and a half years in Paris following his graduation from Pennsylvania in 1836. He was a member of the *Société médicale*, first secretary of the American Medical Association, Professor of the Theory and Practice of Medicine at his alma mater from 1864 to 1883, and Osler's source for the names of Louis's students in the 1830s.²⁸⁵ "...observation," he wrote in 1848, "is the only instrument by which the physical sciences, and medicine amongst them can be either created or perfected. . . ." The numerical method is imperfect, he conceded to its critics, but from its application has come precision in diagnosis and knowledge of certain diseases. Louis's students "...are the men whose

²⁸¹ Boston Society for Medical Observation: Minutes, vol. I, March 28, 1835-January 27, 1838) (Mss at Countway Library, Boston).

²⁸² Ten letters from Louis to Bowditch between 1836 and 1852 in the Bowditch Papers (Countway Library). See on this point the letters of May 30 and June 29, 1836; May 31, 1837; March 23, 1846.

²⁸³ S. Valentine was elected in September 1835; Holmes in January 1836. Cf. Minutes, vol. I. Transactions of the Boston Society for Medical Observation, vol. I (April 1846-March 1849) lists members. John Call Dalton, Henry W. Williams, Calvin Ellis, D. D. Slade, Samuel Kneeland Jr., and Samuel Parkman were those who had studied in Paris.

²⁸⁴ In addition to the records of the Society cited in notes 281 and 283 above, the Countway also has minutes for February 26, 1842-October 15, 1844; and for March 17, 1846-November 16, 1846.

²⁸⁵ K-B, pp. 1106-1107; DAB, 1936, 18: 23-24.

devotion, whose impartiality, whose aversion to hypothetical reasoning, whose single-hearted love of truth, whose industry, patience, and method are most earnestly commended to the imitation and rivalry of American students and physicians, as the only qualities which can insure the formation of that national medical literature, without which the profession of this country can never maintain its rights in the scientific republic of the world. " ²⁸⁶

²⁸⁶ Alfred Stillé, "Medical truth, its nature, sources, and means of attainment," in *Elements of General Pathology* (Philadelphia, 1848), 2 vols. I, 25-48.

MEDICAL HISTORICAL NEWS AND ACTIVITIES

CORRESPONDENCE AND REPORTS

RETIREMENT OF F.N.L. POYNTER, DIRECTOR OF THE WELLCOME INSTITUTE OF THE HISTORY OF MEDICINE

Early in September 1972 Dr. F. N. L. Poynter presided in London over the Twenty-third International Congress of the History of Medicine, organized by the British Society for the History of Medicine. That the scientific sessions, as well as the tours, the visits and the social functions of the Congress were well planned and well conducted was what anyone who knew Poynter and his remarkable record of expertise and efficiency expected. President also of the International Academy of the History of Medicine, Poynter represented a quite unique conjunction of all the scholarly and administrative elements making up this great world conclave last year, even though the Academy was not one of its official sponsors.

At the end of 1973 Noël Poynter will retire as Director of the Wellcome Institute of the History of Medicine, although he will actually leave the Institute at the end of September. In this role he has long served with distinction British universities, British scientific, medical and historical societies, and the scholars of many countries who have made use of the riches of the fabulous Wellcome Library and the Wellcome Museum. Poynter edited in 1954 *A Catalogue of Incunabula in the Wellcome Historical Medical Library* and in 1962 the catalog of its printed books began to appear under his general editorship. Many British Congresses on the History of Medicine and Pharmacy have rejoiced in his organizational and editorial skills and have acknowledged that he has been ever alert, ever diligent, and ever alive to their needs and interests. The *Evolution of Medical Practice in Britain* (1961) was the first of a whole series of "evolutions" (the evolution of hospital, of pharmacy, of medical education) which Poynter had edited for the Congresses, along with themes of a different kind, such as medicine in the 1860's. The *Journal of James Yonge 1647-1721 Plymouth Surgeon*, appearing in 1963, is another fine example of such careful, unobtrusive editing. Back in 1951, Poynter collaborated with W. J. Bishop in presenting John Symcotts under the title, *A Seventeenth Century Doctor and His Patients*; in 1961 he co-authored, with K. D. Keele, *A Short History of Medicine*; in 1971, this time alone, he issued an interesting short volume in the New Thinker's Library,

Medicine and Man. An Anglo-American symposium of 1957, *The History and Philosophy of Knowledge of the Brain and Its Functions* was edited by Poynter in 1958. *Chemistry in the Service of Medicine* came in 1963, *Medicine and Culture* in 1969. All of this takes no account of the lectures, such as *Gideon Delaune and His Family Circle* (1965) or his contributions to collective volumes, for example his fine essay, "Hunter, Spallanzani, and the History of Artificial Insemination" in the Temkin Festschrift of 1968, *Medicine, Science and Culture*. Nor does it indicate in any way the large number of his reviews or review essays, like his 1964 survey of Vesalian studies on the four-hundredth anniversary of the death of Vesalius. Even the books which Noël Poynter has written or edited have been represented above by specimens only. And beyond this has been his perceptive and scholarly editing of the important British quarterly, *Medical History*. The University of Kiel has recognized his achievements by awarding him its honorary M.D. It is significant that this should have been a cross-Channel distinction, for right up to the great Congress of 1972, Poynter has been an international as well as a national figure. It is undeniable, none the less, that his greatest services, in addition to his own contributions to scholarship, have been rendered in London to the scholars of many lands. Whether he served Walter Pagel, on the scene, or Owsei Temkin, visiting from America, Noël Poynter has provided the most sympathetic, knowledgeable and imaginative assistance to his fellow scholars. Over the years he has also provided the facilities and the aid which have stimulated the researches of younger workers and of novices. Outside the scope of his specific, circumscribed duties, he has made his influence felt in the great range of Wellcome enterprises in the history of medicine in recent years, extending into Cambridge and Oxford and even overseas.

And now he is about to retire. His friends and admirers everywhere will unite to wish him calm seas, auspicious gales and happy landings.

LLOYD G. STEVENSON

ANNOUNCEMENTS

AMERICAN ASSOCIATION FOR THE HISTORY OF MEDICINE

Annual Meeting, 1974

The forty-seventh annual meeting of the Association will take place in Charleston, S.C., May 2-4, 1974, at the Francis Marion Hotel. Dr. J. I. Waring is Chairman of the Local Arrangements Committee.

The Program Committee for the 1974 meeting is soliciting abstracts from those wishing to present a paper. Abstracts of 200-300 words should be sent, no later than December 1, 1973, to the Chairman, Dr. Gert H. Brieger, Box 2914, Duke University Medical Center, Durham, North Carolina 28810.

NATIONAL NEWS

Baltimore

The 19th Hideyo Noguchi Lecture of the Johns Hopkins University School of Medicine was delivered on April 12, 1973, by Dr. Lester S. King, Senior Editor of the *Journal of the American Medical Association*. Dr. King spoke on "George Cheyne as a Mirror of 18th-Century Medicine."

Boston

The Joint Atlantic Seminar for the History of Biology was held jointly by Boston University and Harvard University on April 7, 1973. The program, arranged by Diana Hall and Everett Mendelsohn, included presentations by Jack Cohen, Malcolm J. Kottler, Lucille Ritvo, Emanuel D. Rudolph, Karen M. Reeds, James D. Peterson, Philip F. Rehbock and Michael Gross.

Cleveland Medical Library Association

The Friends of the Library held a meeting on April 8 to commemorate the gift of the late Dr. Robert M. Stecher's Darwin Collection to the Cleveland Health Sciences Library. Dr. Saul Jarcho, Editor of the *Bulletin of the New York Academy of Medicine*, spoke on "Some Mysteries and Some Libraries."

Copernicus Anniversary

The Smithsonian Institution and the National Academy of Sciences, in cooperation with the Copernicus Society of America and the U.S. National Commission for UNESCO, sponsored a symposium, "The Nature of Scientific Discovery," in observance of the 500th anniversary of the birth of Nicolaus Copernicus. The Symposium took place April 22-26 in Washington, D.C. In addition to the formal presentation of papers by scholars from many countries, the program featured special exhibitions and films, collegia, public forums, concerts, and other special events.

Josiah Macy, Jr. Foundation

The Macy Foundation has announced the award of thirteen fellowships in the History of Medicine and the Biological Sciences. Seven of these are new awards,

six are renewals. Fellows for the academic year 1973-74 include: James Bono, Ramunas Kondratas, Robert A. McCormick, Dov Ospovat, David K. Rosner (Harvard University); Malcolm J. Kottler (Yale University); Michael S. Zlonis (University of Minnesota); Ann G. Carmichael, Peter C. English, Robert C. Powell (Duke University); David M. Lampton (Columbia University); Pauline M. H. Mazumdar, Ronald L. Numbers (Johns Hopkins University). The Macy program, now in its eighth year, has as its purpose the preparation of young men and women for careers in teaching and research in the history of medicine and the biological sciences as they relate to medicine.

Los Angeles

The Barlow Society for the History of Medicine and the Library of the Los Angeles County Medical Association have announced the thirtieth annual George Dock Lecture for April 12, 1973, with Dr. Alden H. Miller speaking on "Medicine in the Old Far West."

Loma Linda University

On April 19, 1973, Dr. Lloyd G. Stevenson, Director of the Johns Hopkins Institute of the History of Medicine, delivered the second annual William Frederick Norwood Lecture. His lecture was entitled "The American Physician in the Nineteenth Century."

New Jersey Society of Medical Historians

The second symposium of the Society was held on March 31 in the Rutgers University Library. After a welcoming address by Dr. Morris H. Saffron, the following papers were presented: "State Responsibility for Care of the Mentally Ill," Henry A. Davidson; "Surgery during the American Revolution," C. Malcolm N. Gilman; "Prominent Medicine Convenes at Lumberton," Alfred R. Henderson; "Infant Mortality: Dr. Henry Dwight Chapin and the Speedwell Society, 1890-1910," Peter A. Romanofsky; "A Nineteenth Century Odyssey: Dr. Charles Conrad Abbott's Search for Primitive Man in New Jersey," Lucy L. Aiello.

University of Illinois College of Medicine

Dr. Robert P. Hudson delivered the thirtieth annual D. J. Davis Memorial Lecture on April 4, 1973. The subject of the lecture was "Do Diseases Die?"

University of Texas

The University of Texas Medical Branch at Galveston and the University of Texas M.D. Anderson Hospital and Tumor Institute, Houston, are sponsoring a symposium on the Legacies of Railroad Medicine to American Health Care, particularly in the Southwest. All interested persons are invited to attend the symposium which will be held October 27 and 28 in the Auditorium of the Hospital. For further details about the symposium write to Dr. Chester R. Burns, Director, History of Medicine Division, University of Texas Medical Branch, Galveston, Texas 77550.

Obituary

An obituary of Dr. Curt Proskauer, by Alfred R. Henderson, has been published in the *Journal of the American Dental Association*, 1973, 86: 50-57. Dr. Proskauer, a long-time member of the American Association for the History of Medicine, died in New York City on March 20, 1972, at the age of 84.

PROGRAMS OF MEETINGS

George W. Corner History of Medicine Society, Rochester, N.Y.

February 22, 1973: "Edward Livingston Trudeau, a Man before His Time," Gordon M. Meade.

April 17, 1973: "Genetics, Eugenics and the Immigration Act of 1924," Kenneth M. Ludmerer.

Johns Hopkins Medical History Club, Baltimore

April 2, 1973: Joint meeting with the Johns Hopkins Medical Society: "Cushing, Dandy, and Walker—Hopkins Neurosurgery in Perspective," Barnes Woodhall; "A. Earl Walker: Reflections on 25 Years as Chief of Neurosurgery," a sound film.

Josiah C. Trent Society for the History of Medicine, Durham, N.C.

March 6, 1973: "The Travels of Physicians," C. Frederick Kittle.

Mayo Foundation History of Medicine Society, Rochester, Minn.

April 11, 1973: "The Impact of Religious Orders on Health Care," Sister Mary Brigh.

Washington Society for the History of Medicine, Washington, D.C.

March 13, 1973. Presentation of Certificate of Appreciation to Mr. Morris C. Leikind, co-founder and first President of the Society; "Homeopathic Medicine in the 19th Century," Harris L. Coulter.

William Snow Miller Medical History Seminar, University of Wisconsin-Madison

March 21, 1973: "Hard Heads and Soft Hearts: Statistics and State Medicine in Victorian England," John M. Eyler.

April 25, 1973: "A Century of American Medical Ethics, 1869-1969," Chester R. Burns.

NEWS FROM ABROAD

International Society for the History of Medicine

The Society has announced that its 24th Congress will be held in Budapest, August 26-31, 1974. Dr. E. Schultheiss is chairman of the organizing committee. Be-

sides a general session, special Congress topics will be: "Evolution of the Medical View from the 18th Century until the Beginning of the 20th Century," "Medico-Historical Relations between the Middle and East European Countries and Other Countries," and a symposium, "Interactions between Medicine and Other Disciplines from the 18th Century until the Beginning of the 20th Century." Additional information can be obtained from the Congress Office, Federation of Hungarian Medical Societies (MOTESZ), H-1361 Budapest, P.O.B. 32, Hungary.

Spain

The fourth Congreso Español de Historia de la Medicina took place in Granada, April 24-26, 1973. Special themes of the Congress were "La medicina, la ciencia y la tecnica en la sociedad Andaluza," and "Historia de los saberes y tecnicas sobre el sistema nervioso." In connection with the Congress a book exhibit was displayed in the Hospital Real which included 12th- to 18th-century medical and scientific works from the libraries of Granada. A catalog of the exhibit has been issued by the Departamento de Historia de la Medicina, Universidad de Granada.

Death

The *Bulletin* regretfully notes the death of Professor Charles Coury in Paris on April 21, 1973. Professor Coury was well known to readers of the *Bulletin* as a medical historian, an officer of the French Society of the History of Medicine and the International Academy of the History of Medicine, and the author of numerous articles and books on medical historical topics. An eminent phthisiologist, Professor Coury was head of the Département de Pneumologie in the Hôpital de l'Hôtel Dieu and professor of diseases of the chest at the University of Paris. His book, *Grandeur et déclin d'une maladie; la tuberculose au cours des âges*, which appeared shortly before his death, combined both his major interests. A review of the book will shortly appear in the *Bulletin*.

BOOK REVIEWS

ROBERT E. SCHOFIELD. *Mechanism and Materialism: British Natural Philosophy in an Age of Reason*. Princeton: Princeton University Press, 1970. vi + 336 pp. \$9.50.

Robert E. Schofield here presents a multidimensional picture of British natural philosophy during the eighteenth century. By interspersing extensive summaries of a rich variety of primary sources with analytical and synthetic remarks, he succeeds in transmitting both the scientific spirit of the age and a framework for easily comprehending its main contours. According to Schofield, British natural philosophy in the eighteenth century fell into three principal phases. During the early decades, until about 1740, scientific writers adopted primarily the "dynamic corpuscular" mode. They sought to explain all major phenomena in terms of material particles, shapes, sizes, motions, and forces. Then about 1740 there was a noticeable change of temper and style. A new mode of "materialism" replaced the earlier "mechanism," and in this phase Britain's natural philosophers tried to account for phenomena in terms of fluids which were the bearers of certain irreducible properties. Thus, heat, magnetic, and electrical effects were explained by a new generation of writers in terms of bodies possessing varying quantities of the fluids of heat, magnetism, and electricity, each with its unique and appropriate qualities. The earlier search for sub-phenomenal explanatory hypotheses ended here, because the pursuit of ultimate corpuscular mechanisms had temporarily gone out of fashion. In the last years of the eighteenth century, a resurgence and redefinition of dynamic corpuscularity was evident in such writers as Henry Cavendish and Joseph Priestley, so that the earlier eighteenth-century tradition of mechanism, in modified form, was transmitted to the nineteenth century along with more recent "materialism." Throughout these transformations, Newton was cited as the ultimate authority for natural philosophy, on the basis of shifting but always well chosen allusions to the appropriate passages in his writings.

Schofield tries to fit the development of eighteenth-century British physiology into this neat explanatory context. In the early part of the century, he notes, British physiology passed through its own stage of dynamic corpuscularity. Writers such as Archibald Pitcairne, Richard Mead, James Keill, and Stephen Hales all tried to build their physiological theories out of tubes, fluids, and forces. They saw the human body as a hydraulic engine and cited Newton's works as the primary guides to physiological understanding. About 1740, however, British physiology started to change. Like natural philosophy generally, it began to abandon mechanism and struggled toward new explanatory principles, in this case vitalistic ones. When Robert Whytt, William Cullen, and John Hunter wrote about the "animal oeconomy," they departed from an earlier mechanism to sentient principles, special levels of nervous excitability, and vital forces. In Schofield's account, this change in physiology was closely related to the transformation from mechanism to materialism.

Schofield's story of eighteenth-century British physiology has much to recommend it. But there are problems too. One is Schofield's slipperiness as to causal connection. At one place (p. 191) he seems to imply that physiology changed directly due to changes first occurring in natural philosophy. At another place (p. 209 *supra*) he implies that both natural philosophy and physiology changed simultaneously and in parallel, because of deeper transformations in the British intellectual, cultural, and religious climate. And in still another place (p. 209 *infra*) he abandons this approach altogether and suggests that the rise of vitalism might be more closely connected with what was to be a resurgent mechanism than with the newly risen materialism. The differences between these explanations are obvious, and Schofield ought to have decided what he really meant, then argued his case consistently.

Other problems are probably more serious. Schofield seems to be generally unaware of the social or institutional significance of iatromechanism to the English medical profession and of changes within eighteenth-century physiology more complex and more subtle than those he schematically presents. For example, he conveys no sense of the difficulties that had to be overcome by proponents of "Newtonian" iatromechanism at the London College of Physicians. Furthermore, he misses the continual ascendance during the early eighteenth century of neo-Hippocratism. One can see in the literature of the period the gradual but steadily growing assertion of a new medical orientation stressing clinical empiricism and organismic self-adjustment. This new orientation, which can be found in writers of both mechanistic and non-mechanistic inclination, came to fullest and richest expression in Britain about mid-century. Since eighteenth-century physiological speculation and experiment were intimately tied to contemporary medicine, this neo-Hippocratic trend, more directly than shifts in natural philosophy, seems to have had the most to do with the explicit emergence of a descriptive and explanatory vitalism. Another deep tendency, which Schofield notices but somewhat misinterprets, was gradual, continuous methodological liberation. There was a growing assertion, supported by Newton's declared "*hypotheses non fingo*," of an independent domain for physiological explanation. Several writers even deep within the "mechanistic" decades felt the need to claim that certain important physiological phenomena (irritation, muscular contraction) should be "explained" by special, further unexplicated properties or forces analogous to Newton's gravitational attraction. And when, about mid-century, the physiological phenomena of current attention (sensibility and irritability, organismic self-adjustment and maintenance) became too complicated for a crude mechanism, semi-positivist vital forces and an attitude of "*hypotheses non fingo*" naturally gained a widespread popularity. Schofield, in short, has described the surface well but left much for future digging.

Reviewed by THEODORE M. BROWN, PH.D., Assistant Professor of History, City College of the University of New York, New York, N.Y.

CONSTANTINE VON MONAKOW. *Vita mea. Mein Leben*. Herausgegeben von Alfred W. Gubser und Erwin H. Ackerknecht. Bern: Verlag Hans Huber, 1970. 323 pp. Front. Fr 47/DM 42.

For almost forty years the manuscript of Monakow's "Vita Mea" rested in the Central Library of Zürich, and one might question the wisdom of having it published now, when few of his contemporaries are still alive and when his fame as a pioneer in brain anatomy and neurology has paled even among the specialists in his field. Yet, this autobiography is a worthwhile historical contribution to the development of neuroanatomy and the growth of neurology during the last three decades of the nineteenth and the first three of the twentieth century. A greater and more enduring value of this book, however, lies in the fascinating tale of the author's life, his ever renewed struggle for scientific achievements and for personal growth and integrity. Of handicaps and obstacles there were many.

In 1853 Monakow was born as the second son of a Russian baron. His mother died when he was four years old. While his father travelled in Germany and France to overcome his grief, the children were farmed out to strangers and relatives. In 1863 the father sold the family estates north of Moscow and with his family left Russia forever. During the following five years they lived in Dresden, Zürich, Paris, and again in Zürich, where they became citizens in 1869.

Monakow's education was haphazard, with governesses and tutors, with frequent changes from private to public schools, and from Russian to German to French as the language of instruction. Though Monakow writes that he loved and revered his father, a restless, withdrawn and autocratic man, their relationship was never easy. He studied medicine against his father's wish, and when he came to tell him that he had passed his final examination, father and son parted angrily, not to see each other again for 16 years.

His older brother, living as an artist in Paris, became schizophrenic and spent the rest of his life in a Swiss mental institution. The younger sister, to whom he had been very close, died in a private psychiatric hospital. It was while attending her autopsy that Monakow thought for the first time of studying medicine. This ability of being deeply involved and yet detached was a characteristic trait of Monakow's personality, as were his quick emotional reactions of utter despair or radiant optimism.

When Monakow set out to write the history of his life he took J. J. Rousseau's *Confessions* as his model, promising himself to remain critical of his achievements, his motives and actions, and to make it apparent that he was "a simple man, in no way superior to most men of his education and professional status." That he was neither so humble nor so simple will soon become obvious to any reader of his autobiography. The volume has been edited with loving care. A compact introduction illuminates the historical background, and explanations, letters, footnotes, and a bibliography have been added judiciously.

Reviewed by WALTER O. JAHRREISS, M.D., formerly of the Seton Institute, Baltimore, Md.

LEON BERNARD. *The Emerging City: Paris in the Age of Louis XIV.* Durham: Duke University Press, 1970. viii + 326 pp. Ill. \$10.00.

In his *Siècle de Louis XIV*, Voltaire wrote that the age of the "sun king" was the fourth and perhaps the most brilliant of the golden ages or "happy centuries" of civilization. Voltaire made passing references to transformations in Paris during the *grand siècle*. But, like the king himself, who had deserted Paris physically and, to a large degree, financially at the beginning of his reign, Voltaire focused his attention on Versailles, where policies of national and international moment were elaborated. Most subsequent historians have followed his example.

Professor Leon Bernard has confined his study to the development of the city of Paris during the seventeenth and early eighteenth centuries. In considering what he terms the "misty region between urban and social history," the author has not only dispersed much of the mist but made a convincing case for his thesis that Paris was undergoing rapid transition from a medieval to a modern city, particularly during the two decades corresponding to Colbert's ministry (1664-1683). Chapters on city planning, transportation, street improvements, and police services contain ample evidence of this process. The story is not simply one of technological advances. Modernization, as Bernard views it, consisted in new responses by the royal government to problems which had suddenly increased in magnitude if not in kind, such as poverty, sanitation, and crime. Underlying these problems was a dramatic rise in the population of Paris, roughly estimated as doubling from 250,000 to 500,000 in the course of the seventeenth century. The increase seems to have resulted largely from an influx into the city of the poor and unskilled, the very group which fostered and suffered the most from urban problems. But all segments of society were affected and thus had an interest in improved public services. At the same time, the growth of wealthy classes was reflected in architectural and cultural transformations of the city, such as the construction of beautiful residences in the Faubourg Saint Germain and the rapid expansion of the theater.

The government's major response to the needs of Paris was the establishment of the office of lieutenant of police in 1667. Much more than a police chief in the modern sense, the lieutenant of police was closer to a kind of urban executive. The gifted men who held this post during the reign of Louis XIV had considerable success in supervising, coordinating, and, indeed, rationalizing city administration. The doubling of the municipal water supply, the doubling of the length of paved streets, the introduction of effective street lighting, the formation of the first professional corps of fire fighters, and the reform of the police force itself were some of the achievements in which La Reynie, the first lieutenant of police, played a key role.

In other areas, which were less amenable to police regulation because of entrenched privileges or where technological means were lacking, reforms were correspondingly less apparent or even non-existent. The guilds (Chapter 5) and primary and secondary education (Chapter 10) fit generally into this category. In Chapter 9, "The World of Medicine," Professor Bernard's theme of a "new dynamism" must be almost completely abandoned. The Paris Faculty of Medicine fiercely resisted scientific innovations, and its teaching programme reflected its

devotion to medieval scholasticism in form and content. As a professional corps, the Faculty's concerns rarely extended beyond protecting its guild privileges. The mid-seventeenth-century union of the surgeons with the barber-surgeons of Paris was indicative of the low social status of surgery. Ironically, the merger with the barber-surgeons proved advantageous to the surgical profession. For example, the education of a master barber-surgeon, like that of a carpenter or a silversmith, involved extensive practical training as an apprentice and journeyman, climaxed by a series of demonstration-examinations, known as the *chef-d'oeuvre*. Detailed anatomical knowledge was required. Often, the young barber-surgeon learned his trade in the army and in hospitals. This kind of practical training remained an essential part of Paris surgical education after the occupation of barber-surgeon had disappeared. During the last quarter of the seventeenth century, the king's first surgeon, working in cooperation with the lieutenant of police, forged ties between the surgical profession and the government, to the benefit of both parties. But, although the way was being prepared, rapid progress in surgery and in the social status of surgeons did not occur until well into the following century. It is therefore surprising that Professor Bernard would endorse the view that the successful operation for anal fistula performed on Louis XIV in 1686 led to a meteoric rise in the surgeons' prestige. The historical significance of this operation has been grossly exaggerated by modern authors, who have sought to explain a complex development with an isolated incident. For the most part, however, the chapter on medicine maintains the high critical standard of the rest of the book. This is apparent in the discussion and comparison of the Hôtel Dieu and Charité hospitals. Medical historians will also read with profit Chapter 6, "Charity: old and new," especially the account of the Hôpital Général. Originally conceived as an institution which would eliminate mendicity by training healthy beggars, the Hôpital rapidly deteriorated into a prison-hospital for vast numbers of criminals, prostitutes, and the physically and mentally ill.

Far from being episodic, *The Emerging City* weaves diverse aspects of the Paris scene—from the markets of les Halles, to the wards of the Hôtel Dieu, to the *parterres* of the Comédie Française—into a vivid synthesis. Professor Bernard has made excellent use of published primary sources—travelers' accounts, diaries of Parisians, hospital and police records, etc.—as well as standard works and recent scholarly research. His style is consistently lucid and factual. Maps and illustrations of the period are well chosen to complement the text.

Reviewed by TOBY GELFAND, PH.D., Assistant Professor of the History of Medicine, University of Minnesota, Minneapolis, Minn.

MARIO TABANELLI. *Un secolo d'oro della chirurgia francese (1300)*. (Collana de Monografie di "Romagna Medica," vols. 26, 28.) Forlì: Tipografia Valbonesi, 1969, 1970. Vol. 1: *Henry de Mondeville*, x + 584 pp. Ill. Lire 9.500. Vol. 2: *Guy de Chauliac*, ix + 398 pp. Ill. Lire 8.500 [Sole distributors: Casa Editrice Leo S. Olschki].

With unrelenting diligence, the Chiari surgeon Mario Tabanelli continues to edit Italian translations of the works of great medieval surgeons. Recently, two im-

pressive volumes, containing editions of the anatomical and surgical books of Henri de Mondeville and the *Grande Chirurgie* of Guy de Chauliac respectively, were simultaneously seen by him through the press. In each book the translated text proper is preceded by introductory chapters offering bio-bibliographical particulars of each of the two surgeons, as well as background information on the period and the particular environment in which they lived and laboured. Leaving out parts that are not likely to interest the modern medical reader, such as the chapter on the art of calculation—algorism—heading Henri de Mondeville's anatomical treatise, Tabanelli succeeded in offering a readable and quite acceptable edition, well supplied with footnotes and interlinear comments. Explanatory drawings are added to the anatomical section of Henri's work.

Tabanelli's translations are based on the well-known French editions of Henri de Mondeville and Guy de Chauliac by E. Nicaise, as well as on the Latin fifteenth-century manuscript 13002 of the Bibliothèque Nationale in Paris, as far as Henri de Mondeville is concerned. For the translation of Guy de Chauliac, the Italian edition by Paolo Varisco, which appeared in Venice in 1480, and the 1546 Latin Giunta edition were also resorted to. One might wonder why exactly the B. N. codex 13002 was elected: the text of this manuscript is slightly divergent from the three other "complete" fourteenth or fifteenth-century texts (no. 1487, 7130, 7139) in the possession of the French national library, which show a remarkable interrelation. The codex 13002, by the way, is erroneously listed on page 57 of Tabanelli's first volume as carrying the number 1142.

Although Nicaise's influence is unmistakably present throughout Tabanelli's editions, the latter by no means are mere servile imitations of the French example, as appears, for instance, from the bibliography which is more extensive in the Italian edition.

A list of references, a personal index as well as a general table of contents conclude each volume.

As in the earlier products of Tabanelli's instructive pen, spelling mistakes abound in non-Italian names and references; the Christian name of the surgeon from Mondeville is consistently written as Henry.

The illustrations that embellish the well printed volumes are mostly derived from medieval manuscripts or from early printed sources; their quality is uneven. The modern crayon drawings by Enzo Morelli fail to charm the present reviewer.

Reviewed by DANIEL DE MOULIN, M.D., Director of the Instituut voor Geschiedenis der Geneeskunde, Katholieke Universiteit, Nijmegen, The Netherlands.

EDWARD JARVIS. *Insanity and Idiocy in Massachusetts*. Report of the Commission on Lunacy, 1855. With a Critical Introduction by Gerald N. Grob. Cambridge, Mass.: Harvard University Press, 1971. v. p. Ill. \$9.00.

Ideally the reprint of an old book is prefaced by a scholarly introduction which provides the historical background against which the work is to be understood. What had gone before it? Who was the author? What were the circumstances under which the book was written, and what occurred subsequently requires ex-

planation. The 71-page introduction to this book is exemplary in that it not only supplies solidly researched answers to all of these questions, but offers important data and a reinterpretation of the development of American psychiatry. The publisher's claim that G. Grob's introduction provides "a history of mental hospitals, psychiatry, and public policy in America during the first half of the 19th century" is well justified and especially welcome since historical data on the development of American psychiatry are not readily available. As a social historian who has specialized for some time in the history of American psychiatry,* Prof. Grob gives primary attention to social factors and consequences, but he also offers an instructive analysis of the report itself.

His thesis that the development of psychiatry followed the establishment of its institutions and thus might perhaps be viewed primarily as a post hoc rationalization for their existence, challenges the more traditional views of psychiatric history and should stimulate the interest of the medical historian as well. Grob convincingly shows that by 1855 the problem of mental illness was inextricably intertwined with the broader issues of indigency and welfare. For anyone interested in the solution of this problem today this book should be required reading. If publishers demanded that reprints be prefaced by introductions of this calibre, the publication of reprints could become an important stimulus for significant contributions to medical history.

Review by OTTO M. MARX, M.D., Professor of Psychiatry, Boston University School of Medicine, Boston, Mass.

SAMUEL FASTLICHT. *La odontología en el México prehispánico*. Mexico City: Privately printed, 1971. xx + 125 pp. Ill.

The author of this splendid treatise has long been recognized as an authority on the history of dentistry of his native Mexico. This work, published in Spanish, is the culmination of many years of intensive archeological and literary research in the practice of the dental art of pre-Spanish Mexico.

Mexican history, which began with the long Indian period that ended with the arrival of the Spaniards, embraces the cultures of the Olmec, Teotihuacan, Toltec, Mayan, Mixtec, Zapotec, and Aztec. These people established their own individual life modes and styles. Their remarkable cultures were lost to history for centuries because the conquistadors sacked the great cities which were then deserted. Only within recent times were the cities of the Mayas, Incas, and other tribes rediscovered, providing history with the knowledge of the noteworthy accomplishments of these people.

The description of their dental art is divided into two areas, namely, that of the infirmities of the mouth and their treatment, and the other, the practice of mutilation and filling of the crowns of teeth with precious and semi-precious materials. The source material for the former is to be found mainly in manu-

* *The State and the Mentally Ill*, Chapel Hill, 1966. *Social Policy and Mental Illness: The Rise of the Mental Hospital in America 1751-1875*. Presently in preparation for publication.

scripts (codices and documents) and the latter from archeological specimens. The volume is profusely illustrated with color and black-and-white illustrations of specimens of the teeth and jaws. How ingenuously were these ancient artisans able to "drill" the cavities in teeth and in pyrite, hematite, jade, jadeite, turquoise, quartz, cinnabar and serpentina fashion the restorations; to prepare the cementing substance and thus insert them in the teeth with such delicate technique that they have remained permanently affixed to this day. Many may be seen on display at the National Museum of Anthropology in Mexico City.

The concluding chapters describe various source materials in depth, and there is an extensive bibliography and index. It is to be hoped that this contribution, not only to dental history but to cultural history as well, will be translated into English and thus receive the wide audience it deserves.

Reviewed by MILTON B. ASBELL, M.Sc., D.D.S., Secretary-Treasurer, American Academy of the History of Dentistry, and practicing orthodontist, Cherry Hill, N.J.

R. Y. EBIED. *Bibliography of Mediaeval Arabic and Jewish Medicine and Allied Sciences*. London: Wellcome Institute of the History of Medicine, 1971. 150 pp. \$6.00 (£2.00).

Mr. Ebied has compiled an extensive list of books and articles dealing for the most part with medieval Arabic and Jewish medicine, and has included as well the primary sources published so far. This unique bibliography will almost certainly be of value to anyone interested in the field.

Reviewed by DONALD W. PETERSON, M.D., Fellow in the History of Medicine, The Johns Hopkins University, Baltimore, Md.

THE BULLETIN RECENTLY RECEIVED *

- WILLIAM G. ANYLAN et al. *The Future of Medical Education*. Durham, N.C.: Duke University Press, 1973. xxi + 192 pp. \$8.50.
- JOHN Z. BOWERS. *Western Medicine in a Chinese Palace: Peking Union Medical College, 1917-1951*. New York: Josiah Macy, Jr. Foundation, 1973. xii + 250 pp. \$10.00.
- ALLAN CHASE. *The Biological Imperatives: Health, Politics, and Human Survival*. Baltimore, Md.: Penguin Books, 1973. xvi + 399 pp. \$2.25 (paperbound).
- EDWIN CLARKE and KENNETH DEWHURST. *An Illustrated History of Brain Function*. Berkeley and Los Angeles: University of California Press, 1972. 154 pp. Ill. \$14.00.
- RONALD N. GIERE and RICHARD S. WESTFALL (Editors). *Foundations of Scientific Method: the Nineteenth Century*. Bloomington: Indiana University Press, 1973. ix + 306 pp. \$10.00.
- C. R. S. HARRIS. *The Heart and the Vascular System in Ancient Greek Medicine from Alcmaeon to Galen*. Oxford: at the Clarendon Press, 1973. ix + 474 pp. \$48.00.
- COTTON MATHER. *The Angel of Bethesda: An Essay upon the Common Maladies of Mankind*. Edited, with an introduction and notes, by Gordon W. Jones. Barre, Mass.: American Antiquarian Society and Barre Publishers, 1972. xl + 384 pp. Ill. \$25.00.
- Medical Department, United States Army. *Surgery in World War II: Orthopedic Surgery in the Zone of Interior*. Washington, D.C.: Office of the Surgeon General, Department of the Army, 1970. xl + 1099 pp. Ill. 12.25 [For sale by the Superintendent of Documents, U.S. Government Printing Office].
- Medicine and Society, 1972: Four Symposia in Current Problems*. Conducted under the auspices of the American Philosophical Society and the Departments of the History and Sociology of Science of Bryn Mawr College and the University of Pennsylvania, with the support of the Josiah Macy, Jr. Foundation. Philadelphia: American Philosophical Society Library, 1973 (Library Publication No. 5). v + 215 pp. \$2.50.
- M. Michler and J. Benedum. *Einführung in die medizinische Fachsprache*. Medizinische Terminologie für Mediziner und Zahnmediziner auf der Grundlage des Lateinischen und Griechischen. Unter Mitarbeit von Inge Michler. Berlin-Heidelberg-New York: Springer-Verlag, 1972. xii + 352 pp. Ill. DM 28. \$8.90.
- David F. Musto. *The American Disease: Origins of Narcotic Control*. New Haven and London: Yale University Press, 1973. xiii + 354 pp. £4.75. \$10.95.
- John A. Parrish. *12,20 & 5: a Doctor's Year in Vietnam*. Baltimore, Md.: Penguin Books, 1973. 348 pp. \$1.45 (paperbound).
- Marielene Putscher. *Geschichte der medizinischen Abbildung von 1600 bis zur Gegenwart*. Vol. 2. München: Heinz Moos Verlag, 1972. 207 pp. 304 ill., 17 col. pl.
- Tibetan Medicine, Illustrated in Original Texts*. Presented and translated by the Ven. Rechung Rinpoche, Jampal Kunzang. Berkeley and Los Angeles: University of California Press, 1973. viii + 340 pp. \$16.00.

* The *Bulletin* reserves freedom of decision as to the publications to be listed in this section. Items received, other than those assigned for review, are ultimately incorporated into the collection of the Institute of the History of Medicine.

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HISTORY OF RADIOTHERAPY

By Gilbert H. Fletcher, M.D., *The University of Texas Medical Center.* 1973, about 450 pp., 100 ill., Price about \$20.00.

Partial Contents: Radiobiology. Radiobiological Equivalent (RBE). External Beam and Gamma Ray Dosimetry. Equipment and Gadgets. Radium and Gamma Ray Isotope Evolution. Time Factor. Evolution and Phases. Fundamental Clinical Concepts and Techniques. Clinical Tumor Dose and Tolerance. Sensitizers. Head and Neck. Breast. Gynecology. G U. Lymphomas. Central Nervous System. Tumors in Children.

MASTERS OF MEDICINE: An Historical Sketch of the College of Medical Sciences of the University of Minnesota, 1888-1966

By J. Arthur Myers, M.D., Ph.D., *University of Minnesota.* 1968, 6 x 9 in., 942 pp., 233 ill., Cloth, \$15.00, Paper, \$10.00.

This is the story of the building of the present medical school from its humble beginning in a house rented off-campus, to the present near-billion-dollar complex constituting one of the world's foremost medical institutions. The story is told by Dr. Myers from personal experience of over 60 years on the faculties of the school.

TUBERCULOSIS: A Half-Century of Study and Conquest

By J. Arthur Myers, M.D., Ph.D., *University of Minnesota.* 1970, 6 x 9 in., 378 pp., 19 ill., 2 tab., 929 ref., 2 tab., Price, \$8.50.

This is an exciting and sometimes depressing story. It includes the teachers who refused to be tuberculin tested; the farmers who armed themselves to prevent having their herds tested; the sanatoriums which literally sprang up overnight and still could not take all those diagnosed as having "consumption," TB, tuberculosis, or by whatever name it was called. It also tells of the nurses who bravely took care of these patients, only to become patients themselves, and the heart-rending story of little children who died after being exposed to contagious teachers, food handlers, parents, neighbors, etc.

REFLECTIONS ON BIOLOGIC RESEARCH

By Giulio Gabbiani, M.D., Ph.D., (Ed.) *University of Montreal.* 1967, 6 x 9 in., 256 pp., 32 ill., Price, \$10.50.

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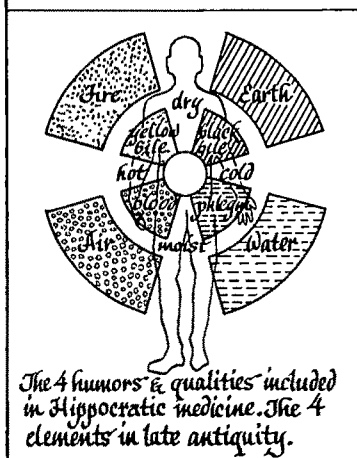
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THE MEDICAL PROFESSION IN A NEW SOCIETY, ROCHESTER, NEW YORK (1811-60)*

EDWARD C. ATWATER

The work of Henry B. Shafer¹ and Richard H. Shryock² turned attention to the influence which social attitudes and economic situations have on medical education and practice. Though physicians had long recognized this effect, these two men were among the first medical historians to suggest that technological ability and scientific discovery might not be the certain means of inexorable medical progress. More recently, Barnes Riznik has examined some of these factors as they affected the condition of the medical profession of rural New England in the early 19th century³ and Gary Nash has described changes which occurred in the same period in an urban group of

* Based on a paper read before the 45th annual meeting of the American Association for the History of Medicine, Montreal, May 4, 1972.

¹ Henry B. Shafer, *The American Medical Profession to 1783/1850* (New York: Columbia Univ. Press, 1936).

² Richard H. Shryock, "The American physician in 1846 and in 1946. A study in professional contrasts," *JAMA*, 1947, 134: 417-424. Reprinted in *Medicine in America: Historical Essays* (Baltimore: Johns Hopkins Press, 1966). Richard H. Shryock, "American indifference to basic science during the nineteenth century," *Arch. Internat. Hist. Sci.*, 1948, no. 5 (reprinted *ibid*).

³ Barnes Riznik, "The professional lives of early nineteenth-century New England doctors," *J. Hist. Med. & All. Sci.*, 1964, 19: 1-16.

attorneys.⁴ Other authors have extended these investigations in the history of the medical profession.⁵

The present study, using one American city as an example, shows that professional standards and status were high in the early years of the 19th century and that they declined thereafter. It examines more closely some of the factors in this deterioration and attempts to explain why this decline took place at a time when the technological resources of medicine were increasing.

Between 1811 and 1861, Rochester, New York, grew from one log cabin by the falls of the Genesee River to a major industrial city of 48,000.⁶ During the 1830s it was the largest post-revolutionary American city and by 1840 there was more flour milled there than at any other place in the world. It was an urban frontier. The survival of good records from this pioneer period makes possible a close examination of the medical profession.⁷

At least 374 medical practitioners served Rochester at some time before 1861.⁸ A study of these physicians shows that: (1) there were

⁴ Gary B. Nash, "The Philadelphia Bench and Bar, 1800-1861," *Comparative Studies in Society and History* (The Hague), January 1965, 7: 203-220.

⁵ Recent substantial studies of the American medical profession include Daniel C. Calhoun, *Professional Lives in America* (Cambridge: Harvard Univ. Press, 1965); Joseph F. Kett, *The Formation of the American Medical Profession* (New Haven: Yale Univ. Press, 1968); William G. Rothstein, *American Physicians in the 19th Century* (Baltimore: Johns Hopkins Univ. Press, 1972).

⁶ Among the factors essential to this rapid development were: (1) post-Revolutionary immigration from New England and the defeat of the Iroquois, (2) farmland which was better than any which existed in areas of Colonial settlement, (3) availability of power from the waterfalls of the Genesee River, and (4) means of transportation to markets, first by way of Lake Ontario to Montreal and, after 1825, to New York over the Erie Canal and Hudson River. Though later surpassed by such cities as Chicago, St. Louis, Detroit, Cleveland and Buffalo, Rochester in 1830 and 1840 was one of the largest inland cities in the United States, exceeded only by Cincinnati, Louisville and Pittsburgh in the Ohio River basin.

⁷ The availability of newspapers weekly from 1818 and daily from 1830, which were indexed as an NYA project during the Depression; of periodic city directories from 1827, which became biennial in 1840; of complete minutes of the village Board of Trustees from 1817 and of the city Common Council from 1834; of municipal assessment rolls, almost complete from 1836; of state and federal census records; and of cemetery records from 1837, provided information which made possible a reasonably complete roster of the medical practitioners who had served the community. Diaries, correspondence, general catalogues of colleges and medical schools, and genealogical materials provided additional information. The account book of the treasurer of the Monroe County Medical Society from 1828 is in the Olin Research Library at Cornell. It lists the names of those who paid dues and also some of those who did not. Unfortunately other early county medical society records are lost. The County Clerk records containing the list of physicians who, as the law required, registered their licenses or diplomas cannot be found.

⁸ Less than 10% of them are mentioned in any of the standard histories of Rochester and the multi-volume publications of the Rochester Historical Society. Most were identified by examination of directories, newspaper index, and cemetery registers.

too many physicians throughout the period, but this over supply became less marked as time passed, (2) there was increasing geographical mobility of the profession, (3) there was early excellence of professional training which was not sustained, (4) there was an almost universal need for physicians to have other means of support in addition to their profession and (5) the financial situation of the profession deteriorated.

At no time before 1861 were there more than 500 people per physician. The ratio gradually decreased so that by the late 1840s and again in the late 1850s it was approaching one physician for 500 people. Before 1840 the ratio was always more than 1:300 and in the earliest period more than 1:200. Figure 1 illustrates the physician-population ratio during this period.

It was apparent, at least to physicians, that there were more practitioners than needed for the 1049 inhabitants present in 1818. Dr. William B. Collar, who had recently attended the medical lectures at the College of Physicians and Surgeons in New York City, wrote home in June 1817 of his prospects in Rochester: "A delightful vil-

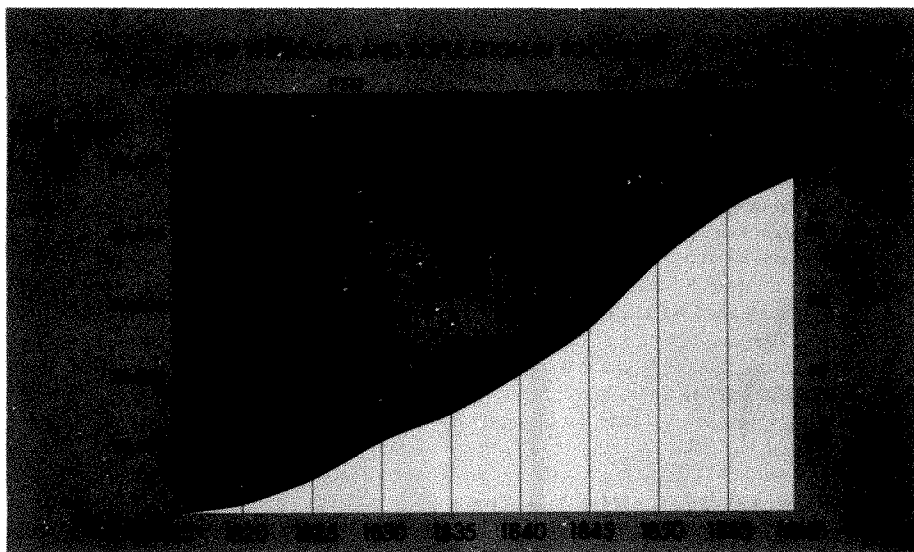


FIGURE 1.

Line graph showing the ratio of physicians to population in Rochester, New York, 1811-1860. The lower line records the whole population according to the scale at left. The upper line represents the number of physicians in the community according to the scale on the right. The scales are designed so that the physician-inhabitant ratio is more than 1 physician for 500 inhabitants as long as the line representing physicians remains above the population line (as it does). Some physician-inhabitant ratios are shown at the top of the chart. The physician-inhabitant ratio gradually decreased during the period studied.

lage . . . but no place for me. There are eight doctors in the village, six more than it can support."⁹ Another physician, already established in the community, asked in a letter from Boston to his wife in 1824 if his assistant was able to "find his way through the maze of doctors with which he [was] surrounded" in Rochester.¹⁰

Not surprisingly, the populace on the frontier was unsettled. By 1834, 70% of all those people listed in the 1827 directory had either died or moved elsewhere. This mobility gradually and steadily decreased so that by 1865 only 50% of those present in 1860 had moved away. Quite the opposite was true of the medical profession. Mobility increased as time went on. Having been remarkably settled in the early period, with only 25% of those present in 1827 gone by 1834, the percentage of those departing within five-year periods increased steadily to 45% by the time of the Civil War. While the general populace was, if anything, becoming less transient, the opposite was true of the medical profession.¹¹ The pattern may be seen on the accompanying line graph (Figure 2).

The changing composition of the medical profession in the years before 1861 is demonstrated in Figure 3. Each square represents a physician and is placed along the abscissa according to the date he started practice in the community. Physicians are arranged in five rows, according to the group with which they associated or identified professionally. Starting at the bottom are those who were members of the County Medical Society. Above them are botanic or Thomsonian physicians, next above are eclectics, and then homoeopaths. On top are those espousing no particular school of practice or organization, but including many who would be considered conventional practitioners

⁹ William B. Collar attended lectures at the College of Physicians and Surgeons in New York 1816-17. He ultimately settled in Wyoming, New York. This letter exists in typescript in the Rochester Historical Society collections in the Rochester Public Library and is quoted in Blake McKelvey, *Rochester, the Water-power City, 1812-1854* (Cambridge: Harvard Univ. Press, 1945), p. 59.

¹⁰ Dr. Anson Colman, December 5, 1824, to his wife Catherine Rochester Colman, daughter of the city's founder. University of Rochester Library, Special Collections.

¹¹ Data on the mobility of the general population were provided by Dr. Blake McKelvey, Rochester City Historian. They are based on randomized samplings of 500 names for each of the periods studied. It has been shown by others (Peter Knights: *The Plain People of Boston, 1830-1860* [New York: Oxford Univ. Press, 1971]) that errors in ascertainment in city directories are more prevalent among the poor. This should, if anything, cause an apparent increase in the mobility of general population which, in fact, was becoming less transient. Note that the first period studied was 7 years rather than 5 (determined by availability of directories) and that this made the departure percentage somewhat higher. Even if this first period is omitted, the pattern persists.

but who did not, however, belong to the Medical Society. Since the law, until 1844, required that all physicians practicing legally be members of the County Medical Society, those physicians who were not members prior to that time, were professionally irregular even if therapeutically conventional.

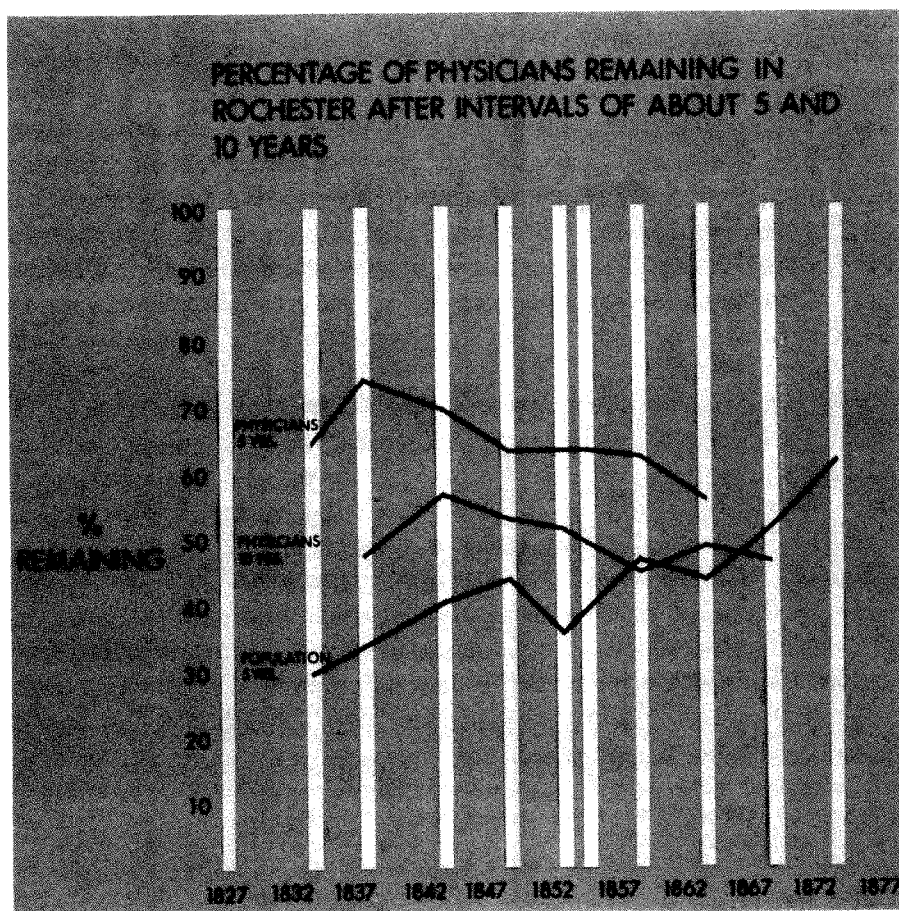


FIGURE 2.

Line graph showing increasing mobility among physicians and decreasing mobility of the general population. The vertical white bars represent years in which a census was made. The intervals are 5 years except for the first three which are 7, 4 and 6 years respectively (when directories were available) and the two in the early 1850s (when different years were used to sample physicians and the general population; these two bars should be viewed as one). The "5 year" horizontal lines represent the percent of the physician group or whole population remaining from the next prior census, the "10 year" horizontal the percent of those physicians remaining from the census taken 10 years earlier.

PHYSICIANS OF ROCHESTER 1811-1860

- 1) YEAR PRACTICE STARTED
- 2) TYPE OF EDUCATION
- 3) TYPE OF PRACTICE

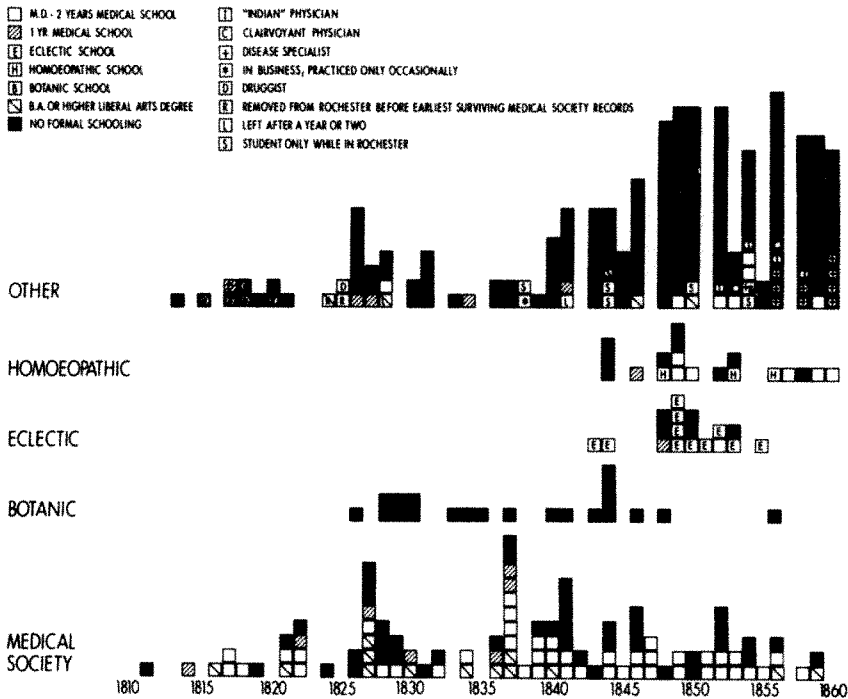


FIGURE 3.

Histogram showing the year of starting practice, the kind of education, and the professional affiliation or type of practice for 368 physicians in Rochester, New York, before 1861. Note that most of those with collegiate education were identified with the regular, eclectic or homoeopathic groups. Most of those with M.D. degrees classed in "other" were in Rochester only as pupils or a short time thereafter, were transient, or had turned to other means of livelihood. The alternating clusters in consecutive years are caused partly by the fact that directories were no more than biennial.

It can easily be seen that the Medical Society included a large proportion of the physicians with formal collegiate professional training. Botanic physicians began to appear in the community in the middle 1820s, and eclectics and homoeopaths in the middle 1840s. The high over-all proportion of well educated physicians in the early period, the decline of the strictly educated physicians and of Medical Society members in the 1850s, and the dramatic increase in the proportion of those without recognized professional education were important changes.

In the early period physicians made up one of the largest groups in Rochester with liberal college education. Until 1840 the numbers of attorneys and physicians coming to Rochester with liberal college backgrounds were comparable—13 physicians, 19 lawyers. In the next two decades lawyers with baccalaureate degrees continued to appear in the same numbers as before (although, in view of the increasing number of lawyers, at a somewhat reduced proportion) while the number of liberally educated physicians dropped to four.¹²

Originally physicians played a prominent role in the political and economic life of the community. Two of the early village presidents were physicians and several physicians held office as trustees and, later, aldermen. Another was surrogate. During the first 11 years the office of village treasurer was held by one of two physicians. Other medical men were prominent in banking, insurance, land speculation, and the milling industry. They were also leaders in the religious and social life of the town and were responsible for organizing a library and a temperance society, to say nothing of the parts they played in ecclesiastical organizations.¹³

But even the better educated of them found it necessary to have

¹² These data were obtained by searching general and historical catalogues of 21 northeastern colleges. Since biographical data or addresses were not always given, they are necessarily incomplete. Colleges with numbers of graduates identified were as follows: Union, 33; Hamilton, 15; Rochester, 11; Yale, 9; Middlebury, 8; Williams, 6; Hobart, 4; Colgate, 3; Columbia, 3; University of Vermont, 3; Dartmouth, 2; 1 each from Trinity, RPI, Harvard, Brown, Colby, Waterville, West Point. None from Amherst, Wesleyan, or Bowdoin. After 1850, there was a sharp increase in the number of college baccalaureates in the community as a result of the arrival of the faculties of newly-opened University of Rochester and the Rochester Theological Seminary. Another interesting phenomenon was the appearance in the community of the college-educated businessman in the 1850s.

¹³ Presbyterians had an early and decisive numerical lead among physicians which they maintained throughout the period. Episcopalians were the other dominant group. Denominational affiliation could be identified for about half of the 107 members of the Medical Society; among this group were 24 Presbyterians, 15 Episcopalians, 6 Baptists, 2 Roman Catholics, 2 Lutherans, 1 Quaker and 1 Unitarian. Unfortunately the parish records of the original Methodist Church and Jewish Synagogue are lost. In spite of this there is evidence that botanic physicians and Methodism were bedfellows. The earliest botanic physician in Rochester, Daniel J. Cobb, was prominent in the organization of the 1st Methodist Society in 1822 and two other early botanic physicians had their offices in the basement of the Methodist Chapel.

From the data available there does not appear to have been exclusion from the County Society on denominational grounds. Though there were other Roman Catholics, a Methodist and two Evangelicals who were not members, these men were less well-trained. It is clearly evident that a much higher percentage of County Society men were church-affiliated than were those without professional affiliation.

The first Irish Roman Catholic physician, Hugh Bradley, came in 1834; the first Evangelical about 1840; the first Lutheran about 1843; the first French Roman Catholic in 1845; the first German Roman Catholic in 1850. The first black physician settled in 1846.

additional means of support besides the practice of their profession. Among the first dozen practitioners in the village, six ran drug stores at one time or another, one sold his own patent medicines, one ran a tavern, and four abandoned medicine altogether for business pursuits. This pattern persisted.

In spite of these problems, members of the medical profession were community leaders in every sense; they played prominent roles in the building of Rochester in the early days and influenced almost every aspect of the society which developed. In the 20 years before the Civil War this all changed. The image and the substance of the medical profession deteriorated drastically. The northern professional gentry became victims of the industrial revolution as the landed gentry of the south would later be. Signs of change were apparent.

Beginning in the middle 1850s newspaper advertisements, which earlier had usually been restricted to formal announcements of practitioners new to the community, began to appear for a variety of cancer doctors, "private" [i.e. venereal] disease specialists, and vendors of various cures.¹⁴ The latter were openly advertising abortifacients and contraceptives. Medicine was becoming increasingly commercial in keeping with the times. The 1850s also saw an increasing number of trials of practitioners for abortion.

The role of the medical profession in the community had changed, too. In contrast to the early period of community development when the physicians had figured prominently in civic activities, newspapers now seldom carried notice of physicians except those who were in trouble. With notable exceptions, physicians had ceased to be community leaders.

¹⁴ The flavor of these specialists, whose appearance became increasingly frequent in the 1850s, may be assessed from the following examples. Dr. White's listed profession fluctuated from clairvoyant physician, to clerk, to physician in successive directories. James Sharp was listed variously as cartman, no employment, and then Indian doctor; apparently an enterprising person, he had been elected director of the Cartmen's Association in earlier years. Drs. Martin and Brown, "cancer doctors," opened the Rochester Cancer Infirmary: "permanently located in Rochester . . . no cure, no pay—if we pronounce it curable." Dr. Henneberger, "late of the West Indies," specialized in chronic, female, private and venereal diseases (a specialty since 1820) and guaranteed permanent cures using strictly vegetable remedies. He also treated onanism and sold Golden Female Pills (\$2 anywhere in the world by mail) which "should not be used during pregnancy, the particulars of which accompany each box." Dr. Brainard offered \$1,000 to any physician who would match his success in treating an equal number of similarly afflicted patients; the adversary might use any therapy but dry cupping which was the challenger's method. Dr. Asa Lowell was arrested at least three times for a variety of activities such as indecent exposure, ravishing an eleven-year-old, assaulting older women. One conviction cost him \$100 in preference to 6 months. Calling himself a "mesmeric doctor" and a "perfectionist," he "used his hands with the utmost freedom—no part of a patient was exempt from his touch."

An indication of the deteriorating financial status of the physician is provided by tax assessment rolls. In 1836, two-thirds of Rochester practitioners were property owners. The average value of physician-owned property per physician was \$2,400; the average value of all property per voter was \$1420. By 1860, the proportion of property-owning physicians had dropped almost to one-third and the per physician value of physician-owned property had declined to less than \$1,500, while the per voter value of community property as a whole had increased slightly to \$1500.¹⁵

Though not always accurate, public reports of income for tax purposes during and after the Civil War also suggest that most medical practitioners were not prosperous in the 1860s. In 1865, there were only 11 physicians among the 455 Rochester men who reported income of more than \$1,000. Of these 11 physicians, four were homoeopaths, one a "private" disease specialist, and two had long since retired from practice to commercial pursuits. Only four were regular practitioners.¹⁶

During the same period the County Medical Society withered. Though it survived in Rochester, in many counties it ceased to function altogether.¹⁷ No longer able to command membership after its disestablishment in 1844 and without assured sources of income from licenses, diplomas and annual taxes, its power declined. Of the 142 physicians who came to Rochester between 1850 and 1860, only 17 joined the Medical Society. Similar decline of organized professional power had occurred in other states.

What happened in Rochester, New York, could have happened and probably did happen in many other communities. It does not appear

¹⁵ Assessment roles for the Village of Rochester survive for the years 1827-1830 in the library of the Rochester Museum and Science Center. Rolls for the City of Rochester are stored in the City Hall Annex; these exist for 1836 and thereafter except for 1837. The assessed valuation of real and personal property increased slightly per capita, from \$166 in 1836 to \$173 in 1860. Essentially all adult males were eligible to vote though there was some restriction on blacks.

¹⁶ *Rochester Union and Advertiser*, July 14, 1866, 2:3. See also *Rochester Daily Democrat*, May 7, 1867.

¹⁷ The Medical Society of Livingston County (next south of Monroe County where Rochester was located) adjourned *sine die* in June 1844, reorganized in 1852, suspended again in 1858 until after the Civil War (cf. W.E. Lauderdale, M.D., "History of the Medical Society of Livingston County, N.Y.," *Trans. Med. Soc. State of New York*, 1876, 298-310). In June 1846 the Cayuga County Medical Society sold its library to pay its debts. Two years later the attendance at the annual meeting was so small that all present were elected to office plus three who were not there. The Society does not appear to have met again until 1861 (cf. The Transactions of the Medical Society of the County of Cayuga, Vol. II., MMS in the Cayuga Museum of History and Art, Auburn, New York).

that the state of the art was a dominant factor in the mid-century derangement of the medical profession. It is true that technical ineptitude was a problem in many areas of medical practice, some of which, mainly in the way of infectious diseases, have since been controlled. It is true that the regular physicians, labelled "bleeders and mineral doctors" by the botanics, often were drastic. But the botanic was equally deserving of the name "steamer and puker" for his own therapeutic violence with lobelia, red pepper and hydropathic modalities, and the image of the early sectarian as therapeutic reformer was more seen than real. Many were self-seeking opportunists, not constructive innovators. The gradual recognition of the healing power of nature did not come to the regular profession merely through the offices of these sectarian reformers (including the later homoeopathists) but was developing also within the profession independently, having been stimulated by the careful studies of the French clinical pathologists.

Emphasis on the bleeding and purging issue has obscured substantial, if less dramatic, innovations in the practice of medicine before the Civil War. Physicians urged patients to be vaccinated against smallpox, and the impediment to control was primarily public prejudice or indifference, not professional ineptitude. They struggled against popular opposition and legal restraint to acquire competent knowledge of human anatomy through dissection of cadavers. They provided virtually all of the science teaching in the United States before 1840 without, until the creation of science schools in mid-century, much economic support from the philanthropic community. Physicians encouraged the introduction and directed the keeping of vital statistics records, the construction of municipal sewers, the use of isolation for epidemic contagious diseases, and often played prominent roles in providing domiciliary care for the insane, the poor, the retarded and the homeless. Physicians introduced the stethoscope and developed the physical examination techniques on which the best practice of clinical medicine was dependent for more than a century. They recognized the anesthetic value of ether and chloroform. Both before and after these discoveries they had made substantial contributions to surgery, especially orthopaedic and gynecological.

Aside from these accomplishments, what was the actual state of the art as practiced at that time? The relief of pain pharmacologically, the removal of superficial diseased tissue or bladder stones, the setting of broken bones or reduction of dislocated joints, the prevention of smallpox through vaccination were all part of the day-to-day practice

of medicine for the well-trained physician. In altering the natural course of most non-traumatic derangements of physiologic function, physicians were less successful, having here to rely often on the drama of emetics, cathartics and venesection for an active stance. But what was important, then as now, was that the good physician was an advisor, able to apply experience and judgment to a problem and give advice which, even in the absence of a pathophysiologic explanation, was apt to be better than that of everyman.¹⁸

Acknowledging this belief, the New York State Legislature had established a "regular" medical profession by law in 1806, anticipating the licensing of all qualified practitioners. Under this law the medical profession was to organize in county units, to examine new applicants for membership, to determine standards for education and practice, and to encourage continuing professional education through social contact among physicians. The provisions for licensure and assessment put a great deal of power in the hands of this professional group. Further evidence of its favored status was the fact that the annual meeting of the state medical society, of which the county societies were the component parts, was held in the Assembly chamber in conjunction with the Legislature.

The original law had exempted from control all those who applied herbs, roots or barks of native origin to the healing of the sick. The original intent of this exclusion is not wholly clear but probably had several aspects: practical rural need, encouragement of good Samaritanism among the poor, fostering the patriotic belief that God had provided the means of medical salvation nearby, and perhaps as a face-saving compromise for those who had opposed the recognition of an exclusive "regular" medical profession. Whatever the reasons, the intent of the law was subverted by the rise of a sect of botanic practitioners under the leadership of the self-trained healer, Samuel Thomson, a group which soon attracted the ire, ridicule and opposition of the "regular" practitioners. Conflict was assured. The botanics nourished the image of themselves as underdogs crusading against the powerful and established Medical Society. The "regular" physicians, already having trouble surviving economically, and their legislative

¹⁸ The correspondence of some of the better early Rochester physicians shows a concern with preventive medicine, with daily regimen, and the avoidance of accidents. Occasionally a physician, having encountered a problem with one of his patients, would advise others with similar underlying conditions to avoid a newly recognized aggravation or on what measures to take should the condition be precipitated.

patrons responded with increasing legal restriction which, of course, made ever more convincing the botanics' persecuted stance.

Anxious to protect the public from the unqualified practitioner and to preserve a standard of professional education which could not survive in the competition of a free professional economy, the legislature, in 1827, made membership in a county medical society mandatory and, in 1830, abrogated the botanic exemption. Since a license was a prerequisite to membership, and since licensing power rested essentially with the county societies, and since non-licensed practitioners could not legally collect fees, the county societies became powerful and closed professional unions. Not unexpectedly, a hue and cry went up from the disenfranchised botanics.

The 14 years which followed were filled with strife between the county societies and the botanic groups. Like all paraprofessional groups, the botanics wanted recognition of their professional legitimacy. But part of the issue was more a cause than a substantive matter. Legal non-recognition appeared to put the botanic practitioner in the position of the underdog—a stance he was at pains to exploit and, later, without which he faded into obscurity. Also, he could collect cash for his services while, by tradition, the legal practitioner was obliged to charge, and often to sue for his fees.

At stake, too, was the broader issue of whether the government should protect a special group like the medical profession regardless of its worthwhile purpose. Comparisons were made between establishing one way of practicing medicine with one way of practicing religion. The medical profession was being attacked as increasingly monopolistic, elitist and exclusive at a time when the hierarchical social system and all other things British were anathema and when the philosophy of laissez-faire was permeating the structure of New York State and national society. The flood of settlers, mostly emigrants from a hitherto stable 200-year-old New England society who were looking for better opportunities, were inclined, at least in the early days, to equalitarianism which was not quite consistent with professionalism. The Common School law of 1813, the Constitution of 1822 giving almost universal male voting franchise, and the completion of emancipation from slavery by 1827 were evidence of this attitude of equality. The anti-rent riots of the 1840s announced the unwillingness of tenants on Hudson River estates to continue as landless indentured servants. In Western New York an explosion between the members and supporters of the secret fraternal Masonic organization and their opponents had deep social

implications. The Bank of the United States and the medical fraternity Kappa Lambda¹⁹ drew strong criticism.

Perhaps it was not equality which was wanted, but rather equality of opportunity to be an aristocrat. This opportunity, it became increasingly obvious, presented itself through commercial endeavors and the acquisition of wealth. To the new leaders, men of commerce rather than profession, the importance of higher education was not at first apparent, perhaps of necessity. In the new social order legal exclusive protection of an educated professional group of physicians became anachronistic.

Popular pressure on the legislature increased. The botanics presented petitions with over 50,000 signatures in support of their demands for legal recognition. In 1844, rather than see the botanics established as a legally recognized professional group, the regular profession urged and achieved abolition of all statutory restraint on the practice of medicine except that recourse to suit for negligence or malpractice remained. The "regulars" preferred disestablishment for themselves to establishment of those competitors they thought unqualified. And so free trade came to medicine in New York State as it had already in many others.

With no regulation whatever, a situation already applying in many states, the conventional practitioners hoped that quality would prevail and education would become the yardstick. "We think," wrote the editor of the *Boston Medical and Surgical Journal* in support of abolition, "that people should be allowed to pay for what they please, and to

¹⁹ Kappa Lambda was a sometime secret but more essentially exclusive medical society of the professionally elite which had been started in 1820 at Transylvania Medical School in Lexington, Kentucky, by the Professor of Theory and Practice of Physic, Dr. Samuel Brown. It spread from there to Philadelphia in 1822 and shortly to New York, Boston, Baltimore, Washington and Edinburgh. Resembling the somewhat later Academies of Medicine, its expressed purpose was raising the medical profession in the "public estimation and conferring mutual benefits." Though it anticipated having members in all parts of the country it remained eastern and metropolitan. Members must have been to medical school, have practiced four years, "have unimpeachable moral integrity, be of temperate habits, and have the general deportment of a gentleman—(and not be) only taught in one branch of the profession." The last would seem to exclude apothecaries, druggists and some surgeons. The "mutual benefit" clause foreruns the non-consultation clause enforced by the AMA as a defense against homoeopaths in the 1850s and later. The members of the Society appear to have had good intentions with some self-serving aspects. The secrecy, which became a strong weapon in the hands of adversaries in the wave of anti-Masonic feeling which swept the country after the abduction of William Morgan, was probably made more of by non-members than those who belonged.

See Chauncey D. Leake, "What was Kappa Lambda?" *Ann. Med. Hist.*, 1922, 4: 192-206; Lee D. VanAntwerp, "Kappa Lambda, Elf or Ogre?" *Bull. Hist. Med.*, 1945, 17: 327-350; Phillip VanIngen, "Remarks on 'Kappa Lambda, Elf or Ogre?' and a little more concerning the Society," *Bull. Hist. Med.*, 1945, 18: 513-538.

whom they please.”²⁰ Some Rochester physicians wrote, “public opinion will not tolerate penal enactments prohibiting Empiricism . . . law is the expression of the public will, without which it can neither be enacted, sustained, nor executed. The written statute is, therefore, a dead letter, whenever the public mind is arrayed against it.”²¹

Some reasons for the deterioration of the medical profession in the early 19th century are easy to identify, though no single factor can be blamed. The early frontier profession, like the community it served, at first still had the flavor that lingered from the days of social stability prior to the Revolution. It tended to view elitism, whether social or professional, as a good thing. It was willing to support, by legal means if necessary, the idea of well-trained physicians (for those who could afford them). It modelled its medical system after that it had known in the “old country”—in this case New England—just as New England and other colonies had earlier formed their own systems on that of Great Britain. But mass migration and immigration of the early 19th century changed the complexion of many of the early frontier communities. Emigrants who left New England, or later Europe, because they were not prospering could neither afford the services of a highly educated physician nor appreciate that such a person might be significantly superior to others who offered healing services. Those struggling for their own economic improvement could hardly be expected to want, in their time of trouble, a costly physician. From them came an acceptance, later a demand for “people’s doctors,” as Daniel Drake derisively called them. Since the “dear people” would have their doctors, but were unwilling to pay for educated ones, the only alternative was more than one class of practitioners in terms of training, ability and the character of performance expected of them.

The predicament of the physician was not unlike that of other skilled, if less educated, craftsmen. Society became polarized between the owners of production and their increasingly specialized and dependent workers. As owners became more and more prosperous, it was not surprising that they became more influential, especially since they directly controlled the livelihood of so many people. It was inevitable in this situation that the stature of the independent skilled craftsman or the professional man in society should be diminished.

The physician and the skilled artisan lost status steadily. The apprentice system of education deteriorated. Some physicians became

²⁰ *Boston Med. & Surg. J.*, 1841, 24: 273.

²¹ *Ibid.*, 1843, 28: 324.

entrepreneurs, and manufactured medicines; only here were fortunes made in medicine. Others established their leadership by becoming professors in centralized medical schools. Still others recognized that in specialization lay their chance of economic survival. Though the beginnings of these trends, and the resistance they encountered from within the profession, can be identified well before the Civil War, it was the last third of the 19th century which saw their fullest development.

This examination of the medical profession in early Rochester has described its apparently promising start, its subsequent deterioration, and discussed some of the factors which led to its decline. The evidence suggests that neither legislative fiat nor scientific prowess are as important factors as public opinion and economic forces in moulding the medical profession.

COMPARISONS AND CONTRASTS BETWEEN
THE EARLY ARSPHENAMINE AND
EARLY ANTIBIOTIC PERIODS*

HARRY F. DOWLING

Knowledge once acquired may remain in continuous use or may be forgotten. If forgotten, it may be recalled and the details re-learned, or it may remain buried and thus unused. One would expect that most of the facts and concepts learned during a recent period of history would either be in continuous use or would be quickly recalled and put to use, while only a few would have been forgotten and would have to be rediscovered. This hypothesis will be tested by comparing some of the events preceding and following the discovery and development of the arspenamines with those surrounding the discovery of the antibiotics.

In 1891, Paul Ehrlich¹ reported the successful treatment of malaria with methylene blue, and from 1904 until his death in 1915 he worked continuously to produce synthetic agents that would cure infections. Extensive investigations led to the discovery of three groups of drugs that had some curative effect in trypanosomal infections, of which the arsenicals proved to be far the most promising. In 1907, Ehrlich patented the 606th compound synthesized, which was named Salvarsan and later arspenamine. By 1909 it was apparent that this drug was highly effective in syphilis in animals and in humans. On April 19, 1910, Ehrlich announced that arspenamine would cure human syphilis, and from then until 1915 his professional life was devoted almost exclusively to the production, testing and control of arspenamine and its analogue, neoarsphenamine, and to the perfection of methods for treating patients with them.² The year 1915 may be said to have ended the period of the initial discovery and introduction of the arspenamines.

Subsequent years saw the development of other drugs for the treatment of syphilis and related diseases, but, except for some minor drugs used in infections of the urinary tract, no effective remedy for

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¹ P. Guttman and P. Ehrlich. "Über die Wirkung des Methylenblau bei Malaria, *Berl. klin Wchnschr.*, 1891, 28: 953-956.

² Martha Marquardt. *Paul Ehrlich* (New York: Henry Schuman, 1951), pp. 117-126, 141-157, 163-176. See also other relevant pages.

bacterial infections was forthcoming until the announcement in 1935 by Domagk that Prontosil would cure streptococcal infections of mice.³ The observation that the active component was sulfanilamide⁴ was followed by the development and use of sulfapyridine and many other analogues. Then, in 1940, a quarter of a century after Ehrlich's death, the antibiotic period was ushered in when a team of investigators at Oxford reported the phenomenal effectiveness of penicillin in bacterial infections in mice, and a year later in humans.⁵

For comparison with the antibiotic period, the activities of Ehrlich and his contemporaries will be divided into: (1) investigations on the properties and actions of chemotherapeutic agents; (2) the clinical testing of the arsphenamines and their control; and (3) the reception of these drugs by the medical profession and the public.

Before the discovery of arsphenamine, Ehrlich and others had been testing chemical compounds on trypanosomal infections, since these could be easily produced and transmitted in rodents. They had observed that when suboptimal doses of a drug were given, trypanosomes resistant to the drug appeared. These strains could retain their resistance for as many as 125 passages through untreated animals. Furthermore, this resistance extended to related drugs; for instance, trypanosomes resistant to trypan red were also resistant to trypan blue, which had a similar structural formula.⁶

Alphonse Laveran was apparently the first to use combinations of drugs to control infections caused by resistant trypanosomes. Ehrlich's group extended these experiments by using combinations of drugs from the three groups of chemicals that had been shown to be effective against trypanosomes.⁷ When arsphenamine proved so dramatically effective in syphilis, Ehrlich put aside his work on combinations and concentrated on developing drugs that would produce maximal effects when used alone. He did not return to the field of bacterial chemotherapy, and it attracted few other workers. Some of them tried

³ G. Domagk. "Ein Beitrag zur Chemotherapie der bakteriellen Infektionen," *Deut. med. Wchnschr.*, 1935, 61: 250-253.

⁴ J. Tréfouël, Mme. J. Trefouel, F. Nitti and D. Bovet. "Activité du]-aminophenylsulfamide sur les infections streptococciques expérimentales de la souris et du lapin," *C. R. Soc. Biol. Paris*, 1935, 120: 756-758.

⁵ E. Chain, *et al.* "Penicillin as a chemotherapeutic agent," *Lancet*, 1940, 2: 226-228. E. P. Abraham, *et al.* "Further observations on penicillin," *Lancet*, 1941, 2: 177-188.

⁶ Paul Ehrlich. "Experimental researches of specific therapy. Chemotherapeutic studies on trypanosomes," in F. Himmelweit (ed.). *The Collected Papers of Paul Ehrlich* (London: Pergamon Press, 1960), vol. III, Chemotherapy, p. 131.

⁷ Himmelweit, *op. cit.*, p. 62.

combinations of chemicals against various bacteria in the test tube,⁸ but these were either without therapeutic effect or were too toxic to be given to humans. John Kolmer tried combinations of antiserum, Mercurochrome and another drug in streptococcal infections,⁹ but since all these agents were either worthless or of questionable value, the results of the use of combinations were equally unimpressive in bacterial infections as the use of single drugs.

The *Manual of Pharmacology* by Torald Sollmann, the standard American textbook of pharmacology at this time,¹⁰ briefly mentioned Ehrlich's work as a possible example of synergism. This statement was carried from the first edition of 1917 through the edition of 1936 and then dropped, but since the reference to Ehrlich's work was incorrectly cited until the 1932 edition, it is doubtful that it had been noticed by many investigators.

The climate of opinion in 1934, one year before Prontosil was introduced, is exemplified in Kolle and Hetsch's *Experimental Bacteriology*.¹¹ The combined method of therapy was mentioned as a possibility, but the examples given were mercury and arsphenamine in syphilis (which was not combined therapy but sequential therapy) and quinine and arsphenamine in malaria (which had never received a satisfactory clinical trial, even though arsphenamine had been available for over two decades). In other words, the concept of combined chemotherapy had lapsed into loose speculation, the examples chosen were based on empirical observation at best, and the few well-grounded laboratory experiments that had been done were ignored or forgotten. When the sulfonamides appeared, interest shifted to testing these drugs individually. After penicillin had been shown to be effective, investigators tried combining it with a sulfonamide, but the results were equivocal,¹² and it soon became obvious that penicillin was so superior that adding sulfonamides accomplished nothing.

Streptomycin was a different story. The earliest trials showed a pronounced effect on tuberculous infections in animals, but clinical

⁸ Summarized in K. Shiga. "Ueber Gewohnung der Bakterien an Farbstoffe," *Ztschr. Immun. Forsch.*, 1913, 18: 65-74.

⁹ John A. Kolmer. *Principles and Practice of Chemotherapy With Special Reference to the Specific and General Treatment of Syphilis* (Philadelphia: W. B. Saunders, 1926), p. 152.

¹⁰ Torald Sollmann. *Manual of Pharmacology*, 1st ed., (Philadelphia, W. B. Saunders, 1917), p. 95, and succeeding editions.

¹¹ W. Kolle and H. Hetsch (tr. Dagny Erikson; ed. John Eyre) *Experimental Bacteriology*, (London: George Allen & Unwin, 1934), vol. 2, p. 193.

¹² G. L. Hobby and M. H. Dawson. "The effect of sulfonamides on the action of penicillin," *J. Bacteriol.*, 1946, 51: 447-456.

results were not as dramatic. Among the first 135 patients in the controlled study conducted by the Veterans Administration, many patients did not improve and five actually got worse on streptomycin therapy.¹³ Also, it was soon obvious that streptomycin-resistant strains of tubercle bacilli frequently emerged in streptomycin-treated patients. The sulfones and para-aminosalicylic acid had been shown in 1940 and 1946, respectively, to be effective in experimental tuberculosis in animals,¹⁴ and although their clinical effectiveness was much less than that of streptomycin it seemed reasonable to use one or the other in combination with the antibiotic. Animal experiments reinforced the supposition and clinical trials followed. When isoniazid was introduced, carefully controlled studies showed that when it was used with streptomycin the combination slowed the emergence of resistant strains of tubercle bacilli as compared with isoniazid alone or as compared with streptomycin in combination with para-aminosalicylic acid.¹⁵

Although penicillin was strikingly successful in infections caused by pneumococci, staphylococci, gonococci and some streptococci it seldom brought about recovery in endocarditis caused by enterococci. Thomas Hunter found that enterococci were killed *in vitro* by a combination of penicillin and streptomycin, whereas a similar concentration of either antibiotic would merely inhibit growth. First Hunter, and then others, used this combination to treat patients with enterococcal endocarditis and obtained better results than when they used either penicillin or streptomycin alone. This led to the trial of combinations of antibiotics in many other infections, some of which were highly successful. When synergism occurred, it was usually observed when two primarily bactericidal drugs, such as penicillin and streptomycin, were used together.¹⁶

¹³ *Minutes, First Streptomycin Conference*. Dec. 12, 13 and 14, 1946. Edited by Veterans Administration Branch Office no. 7, Chicago, Ill. Second printing, 1949, p. 135.

¹⁴ W. H. Feldman, H. C. Hinshaw and H. E. Moses. "The effect of promin (sodium salt of p, p'-diamino-dephenyl-sulfone-n,n'-dextrose sulfonate) on experimental tuberculosis: a preliminary report," *Proc. Staff Mtg. Mayo Clin.*, 1940, 15: 695-699. J. Lehmann, "Para-aminosalicylic acid in the treatment of tuberculosis," *Lancet*, 1946, 1: 15-16.

¹⁵ M. I. Smith and W. T. McClosky. "The chemotherapeutic action of streptomycin and promin in experimental tuberculosis," *Pub. Health Rep.*, 1945, 60: 1129-1138. G. P. Youmans, A. S. Youmans and R. R. Osborne. "The combined effect of streptomycin and para-aminosalicylic acid in experimental tuberculosis in mice." *Journal-Lancet*, 1947, 67: 403-404. "The effect of streptomycin on the emergence of bacterial resistance to isoniazid. A Public Health Service cooperative investigation," *Amer. Rev. Tbc.*, 1953, 67: 553-567.

¹⁶ T. H. Hunter. "Speculations on the mechanism of cure of bacterial endocarditis," *J.A.M.A.*, 1950, 144: 524-527. *Ibid.* "The treatment of subacute bacterial endocarditis with antibiotics." *Amer. J. Med.*, 1946, 1: 83-92. H. F. Dowling. "Present status of therapy with combinations of antibiotics." *Amer. J. Med.*, 1965, 39: 796-803.

But under certain circumstances, combination therapy could produce a totally different result. C. H. Browning, who had worked on the chemotherapy of trypanosomal infections under Ehrlich, continued these investigations after he returned to England. In 1922, he and Gulbransen reported that, when parafochsin and tryptaflavin were used in mice to combat infection with a parafochsin-resistant trypanosome, the parafochsin diminished the therapeutic effect of the tryptaflavin, rather than enhancing it.¹⁷ This phenomenon of interference, as Browning called it, or antagonism, as we speak of it today, was duly noted in an occasional textbook, but was generally ignored as a laboratory curiosity or as a phenomenon peculiar to trypanosomes.

A quarter of a century after Browning and Gulbransen's report, the phenomenon of antagonism was rediscovered by several investigators, particularly Jawetz and his associates who studied the effects of combinations of antibiotics on a number of bacteria *in vitro* and in animals.¹⁸ In the meantime, dissatisfied with the high fatality rate in patients with pneumococcal meningitis treated with large doses of penicillin, Lepper and this author gave penicillin or penicillin plus chlortetracycline to alternate patients. When our controlled study was completed, we were dismayed to find a fatality rate of 79 per cent in the patients who had received both antibiotics in contrast to a 30 per cent fatality rate among those who had been given penicillin alone.¹⁹ Similar instances of antagonism were subsequently observed in certain human infections treated with a combination of a primarily bactericidal antibiotic (such as penicillin) and a primarily bacteriostatic antibiotic (such as chlortetracycline or chloramphenicol).²⁰

To return to the comparison of the arsphenamine and antibiotic periods, it is significant that in none of the articles reporting the early laboratory or clinical observations on synergism or antagonism of antibiotics were the studies of Ehrlich and his contemporaries mentioned, nor were Drs. Hunter, Jawetz, Lepper or the author influenced by these studies when we first treated patients with combinations of

¹⁷ C. H. Browning and R. Gulbransen. "An interference phenomenon in the action of therapeutic substances in experimental trypanosome infections," *J. Path. & Bact.*, 1922, 25: 395-397.

¹⁸ E. Jawetz. "Antibiotic synergism and antagonism. Review of experimental evidence," *Arch. Int. Med.*, 1952, 90: 301-309.

¹⁹ M. H. Lepper and H. F. Dowling. "Treatment of pneumococcal meningitis with penicillin compared with penicillin plus aureomycin. Studies including observations on an apparent antagonism between penicillin and aureomycin." *Arch. Int. Med.*, 1951, 88: 489-494.

²⁰ Dowling, *op. cit.* (n. 16 above).

penicillin and other antibiotics.²¹ Certainly, for most investigators, the feasibility of combination therapy in infections was a concept that had been forgotten and had to be re-learned.

Ehrlich also used the phenomenon of resistance in another way. He screened newly-synthesized drugs through what he called, in his fondness for Latin phrases, a *cribum therapeuticum*, a therapeutic sieve. He developed a strain of trypanosomes resistant to drugs of all the three classes that had been synthesized. If he should find a drug that was effective against this resistant strain, he would know that he had a totally new therapeutic agent.²² A similar technique is used today, having been initiated entirely independently of Ehrlich's work, so far as this author can ascertain. Strains of bacteria that cannot be differentiated from other strains by serologic or chemical methods are often classified by growing them in the presence of a representative of each of the groups of antibiotics in common use. If two strains show the same degree of resistance to the same antibiotics, they are probably identical strains.

Early in his investigations, Ehrlich grasped the concept that if he could find a compound that had a slight therapeutic effect he could modify the molecule until he came upon a really effective analogue. This became the basis of his entire strategy, and this is how he deduced that arsphenamine would be of therapeutic value before he had it synthesized. After the introduction of arsphenamine, he and others used the same method to search for analogues, producing neoarsphenamine, sulfarsphenamine and silver arsphenamine, to mention only a few.

This principle, although it was practiced widely in the development of drugs of other therapeutic areas, was followed only halfheartedly and then by only a few investigators in the search for antibacterial drugs, until the intensive program of the I. G. Farbenindustrie of systematically testing dyes for their chemotherapeutic effect resulted in the discovery of Prontosil's effectiveness.²³ Within a few years, dozens of analogues of sulfanilamide had been synthesized and tested, with the result that sulfanilamide was pushed aside by sulfapyridine and sulfathiazole, and those in turn by sulfadiazine and others. But again, when the rush to discover new antibiotics led investigators to screen

²¹ Personal communications from T. H. Hunter, E. Jawetz and M. H. Lepper.

²² P. Ehrlich in Himmelweit, *op. cit.* (n. 6 above), p. 132.

²³ Note 3 above. See also Lloyd G. Stevenson. *Nobel Prize Winners in Medicine and Physiology* (New York, Henry Schuman, 1953), p. 209.

hundreds of molds for their antibacterial properties, they neglected the search for analogues, until Ernst Chain, becoming, as he put it, "fed up with screening in 1946 or 1947"²⁴ turned his attention to modifying the penicillin molecule. This approach produced methicillin and its analogues, the first penicillins effective in infections caused by penicillinase-producing staphylococci, and gives promise of others. The method of modifying the molecule of a drug to find analogues of greater effectiveness or lesser toxicity had been used since Ehrlich's time by scientists in universities and particularly by those in the laboratories of pharmaceutical companies in searching for new drugs in other therapeutic fields. Therefore, although this concept was temporarily put aside in the headlong rush to find antibiotics already produced in nature, it was ready at hand and was brought back into active use when other methods became less productive.

The clinical testing of arsphenamine and its control can also be compared with these activities in the antibiotic period. Before Ehrlich was willing to allow doctors in general to use the new drug, he insisted upon exhaustive trials in animals and in man. Between June and December, 1910, he provided, free of charge, about 65,000 doses of the drug to a limited number of doctors for clinical studies and he himself tabulated, summarized and drew conclusions from this mass of information.²⁵ Professor Huebner of Gottingen wrote that the information gained from testing in seven and a half months had been a "triumph of organization—one might say as great a moral achievement as the discovery of the effective chemical structure is a scientific one."²⁶

Such extensive control of a new drug by a single investigator has not been repeated often, but the circumstances attending the introduction of penicillin into the United States were somewhat similar. A committee of experts, under the aegis of the Office of Scientific Research and Development, were placed in charge of the civilian supply of the antibiotic so that it might be thoroughly tested. Patients were treated at first by a small group of investigators and later by others in addition, but always under the control of a Committee of the National Research Council chaired by Chester Keefer. During this time, data

²⁴ E. B. Chain. "Round table: Are new antibiotics needed?" *Antimicrobial Agents and Chemotherapy*—1965, p. 1112.

²⁵ Marquardt, *op. cit.* (n. 2 above), pp. 172, 170, 173, 180.

²⁶ Marquardt, *op. cit.*, p. 200.

were accumulated on nearly ten thousand cases.²⁷ Penicillin was not released through the usual commercial channels until March, 1945.²⁸

At a time when we hear loud cries of protest against the Food and Drug Administration's requirements for extensive and searching clinical trials of new drugs, it is interesting to look at some of Ehrlich's problems in regulating the use of arsphenamine. As soon as he announced its effectiveness at the Congress of Internal Medicine on April 19, 1910, doctors all over the world wanted to be among the first to use it. He was besieged by hundreds of letters a day, innumerable cables and crowds of doctors filling the corridors leading to his office.²⁹ A physician from Chicago who visited Ehrlich at that time wrote, "Not since the announcement of Koch's tuberculin has there been such an onslaught of medical men in Germany."³⁰ When Ehrlich refused to give the drug to anyone unless he was a trained syphilologist and had adequate laboratory and clinical facilities, other doctors were irked.³¹ The Editor of the *Journal of the American Medical Association* felt it necessary to print a cablegram he had received: "Ehrlich says doctors stay home, don't write; 606 market November."³²

Yet the leaders of the medical profession in Germany were contributing to this furor. Samuel Lambert, of New York, reviewing the status of arsphenamine six months after Ehrlich's first public announcement, commented on the dearth of written reports in contrast to the enthusiastic testimonials of the professors who were using it,³³ and Albert Neisser took an unusual step by writing an open letter to Ehrlich in the *Deutsche medizinische Wochenschrift*, claiming that "with absolute certainty . . . this new drug exerts an extreme, an astonishing action, as well upon the spirochetes as upon the products of syphilis."³⁴ It is not surprising, then, that physicians and persons

²⁷ Committee on Chemotherapeutic and Other Agents, Division of Medical Sciences, National Research Council. "Penicillin in the treatment of infections. A report of 500 Cases." *J.A.M.A.*, 1943, 122: 1217-1224. Donald G. Anderson and Chester S. Keefer. *The Therapeutic Value of Penicillin. A Study of 10,000 Cases.* (Ann Arbor, Mich.: J. W. Edwards, 1948).

²⁸ A. N. Richards. "Production of penicillin in the United States (1941-1946)," *Nature* (London), 1964, 201: 441-445; p. 443.

²⁹ Marquardt, *op. cit.*, pp. 177-179.

³⁰ B. C. Corbus. "A visit to Ehrlich," *J.A.M.A.*, 1910, 55: 1305.

³¹ Note 29 above.

³² Editorial: "Ehrlich's syphilis remedy not yet on the market," *J.A.M.A.*, 1910, 55: 951.

³³ S. W. Lambert. "The Ehrlich-Hata antisyphilitic preparation "606" (Dioxy-diamino-arsenobenzol)," *Amer. J. Med. Sci.*, 1910, 140: 451.

³⁴ A. Neisser. "Ueber das neue Ehrliche Mittel. Offener Brief an den Herausgeber," *Deut. med Wchnschr.*, 1910, 36. 1212-1213.

outside the medical profession shared this enthusiasm. A review in the *American Journal of Urology* stated: "The daily press in every civilized country has given columns to the discussion of the new treatment, investing the new remedy, after the fashion of journalism, with wonderful properties, even more striking than those actually observed."³⁵ Another American observer spoke of the "considerable bitterness of feeling over the manner in which the results of '606' have been exploited in the daily papers, some of the results appearing in the lay press before they were published in the medical journals. . . ." The same writer counseled physicians "... not to grow impatient at the delay but to study well in the meantime every phase of the situation so that perhaps harm may not be done by the misuse of '606' when it is available for general use."³⁶

There were numerous parallels between the introduction of penicillin and arsphenamine. The first patient was treated with American-made penicillin on March 14, 1942, and by June of that year only ten patients had been treated. By August, 1943, the list had expanded to 500 patients treated by twenty-two groups of investigators.³⁷ By that time the pressure to use penicillin was tremendous. The author can remember how, in late 1943, when he was asked by Dr. Chester Keefer to oversee some of the use of penicillin in Washington, D. C., patients and their families demanded that their physicians use it in every desperate, or presumably desperate, illness even remotely resembling an infection. Dr. Keefer was an ideal administrator, with all the toughness necessary to hoard the tiny stock of penicillin for those who could best benefit from it or for experiments from which we could best learn how to use it.

Once larger supplies of either drug became available, there were again parallels. The obvious success of the drug in some cases tempted doctors to try it in others where no rationale existed for its use. Arsphenamine was said to be effective in scurvy, malaria, psoriasis, pernicious anemia, Sydenham's chorea, leprosy, and several skin diseases, including cancer.³⁸ As for penicillin, the author can recall that

³⁵ "The Ehrlich-Hata preparation for syphilis (Dioxy-diamino-arseno-benzol hydrochloride). A synthetic review," *Amer. J. Urol.*, 1910, 6: 503-519.

³⁶ E. G. Ballenger. "'606', or Dioxydiamidoarsenobenzol," *N.Y. Med. J.*, 1910, 92: 1156-1162.

³⁷ Note 28 above, p. 442.

³⁸ J. E. R. McDonagh. *Salvarsan in Syphilis and Allied Diseases*. (London, Oxford University Press, 1912). Reviewed in *Amer. J. Med. Sci.*, 1913, 145: 431-432. H. L. Arnold. "Salvarsan in general practice." *J. Mich. St. Med. Soc.*, 1913, 12: 198-200. W. H. Best: "Use of Salvarsan in non-syphilitic diseases," *J.A.M.A.*, 1914, 63: 375-380.

it was used not only in viral hepatitis and encephalitis and in mycoplasmal pneumonia but also in malignant diseases, such as Hodgkins's disease, leukemia and carcinoma.

The excessive use and misuse of arsphenamine brought about a revulsion of feeling among some physicians. It was a toxic drug if given improperly or in too large doses. Ehrlich's working hours, after the preliminary clinical trials, were largely given over to preventing adverse reactions by teaching physicians how to prepare and administer the drug and by warning against procedures that might precipitate adverse effects.³⁹ To some, including the Editor of the *Journal of the American Medical Association*, Ehrlich seemed to be too much on the defensive, to be protesting too much. He complained that Ehrlich and his followers had exercised great ingenuity in explaining away many of the adverse reactions, even to the extent of claiming that some of the reactions were being unjustly blamed on arsphenamine when they were actually manifestations of syphilis which those who had studied syphilis before the advent of arsphenamine had been too obtuse to recognize. The Editor even questioned whether arsphenamine was of sufficient value in syphilis to overbalance its untoward effects.⁴⁰ Another critic, while admitting that arsphenamine was of some value in syphilis, doubted that it was any better than mercury.⁴¹ As late as 1914 the *Journal of the American Medical Association* warned against the hope that arsphenamine was an adequate substitute for mercury in the treatment of syphilis.⁴²

Professor Gaucher of the University of Paris went much further. Under the title "606 or the German Poison," he claimed that arsphenamine never cured syphilis; that it would "skin over an ulcer" without healing it; that it caused syphilis to spread into the central nervous system; and that it was always a menace.⁴³ The swing of the pendulum, which often follows the first flush of enthusiasm accompanying the introduction of a new drug, had reached the extreme. Fortunately, although Gaucher warned that "errare humanum est, sed perseverare diabolicum," doctors did persevere with arsphenamine. They found that its toxicity could be minimized by proper preparation of the patient and the drug. By using proper doses, interspaced with

³⁹ Marquardt, *op. cit.* (n. 2 above), pp. 190-191, 194, 198-199, 200-205.

⁴⁰ Editorial. "The present position of Salvarsan in syphilis," *J.A.M.A.*, 1912, 59: 1295.

⁴¹ D. C. Ridenour. "The treatment of syphilis," *J. Ind. State Med. Assn.*, 1912, 5: 209-212.

⁴² Editorial. "The historical perspective in medicine," *J.A.M.A.*, 1914, 63: 1300-1301.

⁴³ C. P. E. Gaucher. "Le 606 ou Le poison Allemand," *Ann. des maladies vénériennes*, 1917, 12: 705-723.

courses of mercury and later of bismuth, they learned arsphenamine's limitations—which lesions of syphilis would respond rapidly, which slowly and which not at all. Finally they learned how to anticipate and treat adverse reactions. The use of neoarsphenamine, when it appeared, also prevented many adverse reactions, since it could be prepared and administered more easily and was less toxic than the parent drug.⁴⁴

Adverse reactions to penicillin were less of a problem. First of all, it was used longer under controlled conditions and was tested more thoroughly as a result of the pharmacological knowledge that had accumulated in the intervening quarter of a century. Consequently, the causes of the adverse reactions were prevented. Second, penicillin was a less toxic drug than arsphenamine. When given in therapeutic doses its direct, toxic effect was limited to the central nervous system, and then only when the antibiotic was applied locally or administered intrathecally. Its principal adverse effects were hypersensitivity reactions, and these began to appear in appreciable numbers only after penicillin had been in use for some time. There were only 14 instances of urticaria in the first 500 cases treated and no severer hypersensitivity reactions.⁴⁵ As higher doses were used, the incidence of reactions increased. For instance it was found in 1949 that 7.8 per cent of patients receiving six million units or more of penicillin a day by injection had reactions of the hypersensitivity type as compared with only 0.6 per cent of those receiving a smaller dose.⁴⁶ But, by the time the larger doses were in general use, other antibiotics were also available: streptomycin, chlortetracycline and chloramphenicol. It seems likely that the disillusionment that followed soon after the general use of arsphenamine was prevented in the case of penicillin not only because it was a less toxic drug but also because the doctors could usually turn to another antibiotic when an adverse reaction to penicillin did occur. Also, it was hard to be gloomy about antibiotics when another one seemed always to be just around the corner.

It is clear that in the interval between 1915 and 1942, progress had been made in the techniques of examining patients, studying microorganisms and developing new drugs, but an equally important difference in the periods was the development of administrative skills

⁴⁴ H. Fox. "Experience with Neosalvarsan at the Harlem Hospital," *Amer. J. Med. Sci.*, 1914, 147: 97-105.

⁴⁵ Note 27 above, Committee on Chemotherapeutic and Other Agents.

⁴⁶ M. H. Lepper, et al. "Studies on hypersensitivity to penicillin. I. Incidence of reactions in 1303 patients," *J. Clin. Invest.*, 1949, 28: 826-831.

which enabled physicians to test a new drug in humans on a large scale rapidly, efficiently and objectively.

A third area in which a comparison of arsphenamine and penicillin seems pertinent is that which relates to patents and prices. Ehrlich patented arsphenamine in 1907, soon after it was synthesized.⁴⁷ When its therapeutic value was shown in the first patients, Ehrlich's laboratory stepped up production for extended human trials, but he was unable to meet the demand that followed his public announcement, even though, as has been mentioned, he provided 65,000 doses without charge in the first six months. Meanwhile, the Hoechst Chemical Works installed facilities for the bulk manufacture of the drug,⁴⁸ under an agreement that 55 percent of the profits would go to Ehrlich's laboratory and 45 percent to the manufacturer.⁴⁹ The costs of the outlay for construction and the costs of manufacture, plus the profits, kept the price high, so much so that Neisser, one of the professors who had originally studied the drug, felt impelled to complain and to express his hope that the price would soon be diminished "so that the modest purse will be able to meet the expense."⁵⁰

By the latter part of 1915, the Allies had blockaded Germany so completely that supplies of arsphenamine had been cut off from America. The price in this country rose to \$35 an ampoule. Since no one outside Germany had been allowed to produce the drug, American chemists were unfamiliar with the process, but after considerable work, Raiziss of the Dermatological Research Laboratories succeeded in synthesizing it.⁵¹ Physicians petitioned Congress to abrogate the German patents on the drug, and on November 27, 1917, the Federal Trade Commission licensed three firms to manufacture and sell it. Before the war the drug had been sold in the United States at \$4.00 per dose. In contrast, the prices for the first lots manufactured in this country were \$1.00 per dose to the army and \$1.50 to physicians.⁵²

Another world war brought about collaboration between the Federal

⁴⁷ Marquardt, *op. cit.*, p. 176.

⁴⁸ Marquardt, *op. cit.*, p. 179.

⁴⁹ Note 30 above.

⁵⁰ A. Neisser. "Le traitement actuel de la syphilis. Avantages de l'association Salvarsan et mercure; quelques principes pour l'emploi du Salvarsan, *Ann. des maladies vénériennes*," 1913, 8: 721-761.

⁵¹ G. W. Raiziss: "Development of the American arsphenamine industry," *Indus. & Eng. Chem.*, 1923, 15: 413-415.

⁵² "Trade Commission acts on Salvarsan patent," *Amer. J. Syph.*, 1918, 2: 202-203.



government and the drug industry in America to produce penicillin. The Office of Scientific Research and Development financed much of the research on production and most of the costs of testing penicillin, through contracts totalling over two million dollars. Investigators in the Northern Regional Research Laboratory of the Department of Agriculture made two important contributions: they found a strain of *Penicillium notatum* that yielded much higher quantities of penicillin than the original Oxford strain, and they discovered that growth in corn steep liquor would greatly increase the yield.⁵³ The Federal government financed the construction of six plants to manufacture penicillin, and aided construction and financing of privately financed facilities.⁵⁴ As a result of this collaboration, the production of penicillin increased from zero at the beginning of 1942 to 650 billion units per month by August, 1949.⁵⁵ The original price of penicillin in 1943, when only limited supplies were produced, was \$20 per vial of 100,000 units (not enough to treat a patient with pneumonia for one day, by today's standards) to less than a dollar a vial by mid-1945 and to 30 cents a vial by 1947.⁵⁶ The early cooperation of the Federal government and the fact that the early patents were shared have meant that the price of the original form of penicillin has remained low ever since. Thus, because of mobilization for a war that happened to be going on at the time, the price of penicillin probably declined more rapidly than that of any other drug. But, except under such special circumstances, there is little evidence that the public interest is any better served today in the realm of patents and prices than it was in Ehrlich's time.⁵⁷

When the early arsphenamine and the early penicillin periods are compared, it is apparent that much of the knowledge gained in the first period was retained and utilized in the second. The idea of finding a substance that would have some deleterious effect on a micro-organism and of modifying its structure so as to increase its therapeutic effect or decrease its toxicity continued to be used after Ehrlich's day in the search for drugs to treat diseases other than infections. Thus, it was at hand ready to be taken up when screening molds for new antibiotics

⁵³ Note 28 above, p. 441.

⁵⁴ Federal Trade Commission. *Economic Report on Antibiotics Manufacture*, June 1958, (Washington: Government Printing Office, 1958), pp. 50-53.

⁵⁵ Note 28 above, p. 443.

⁵⁶ Note 54 above, pp. 166-167.

⁵⁷ I have covered this subject more extensively in Harry F. Dowling, *Medicines for Man. The Development, Regulation, and Use of Prescription Drugs* (New York, Alfred A. Knopf: 1970), pp. 81-119.

became less productive. On the other hand, the knowledge that combinations of two drugs were sometimes more effective against resistant micro-organisms than either drug alone and the phenomenon of antagonism between chemotherapeutic agents were almost completely forgotten between the two periods, and were re-discovered in the antibiotic period. There are several possible reasons for this.

First, trypanosomes and spirochetes were considered to be different from bacteria. Investigators in the one field were not accustomed to working in the other, and what was effective against one group would not necessarily be effective against the other. A corollary of this was that, since all the therapeutic successes had occurred in the first field, very few investigators were attracted to the study of bacterial chemotherapy until the discovery of Prontosil.

Second, the striking effectiveness of arsphenamine sent investigators on a search for other drugs that would be effective when used alone, so that the idea of using combinations was pushed aside.

Third, and I think most important, the demonstration of a practical use for a concept tends to link together the facts relating to the concept, while those that cannot be tied in tend to be ignored. Arsphenamine was useful; combining chemicals to achieve a therapeutic action was merely a laboratory curiosity in Ehrlich's day. Thus, accounts of these studies were buried in obscure fine print until most people forgot them altogether. Only the re-discovery of combination therapy as a practical therapeutic procedure re-awakened interest in the concept.

In both periods, there was a desire to study a new drug properly before general use and the realization of the need for adequate control of such studies by a responsible person or group. Knowledge of clinical pharmacology and administrative expertise had improved in the interim, and these were reflected in the more expeditious and thorough testing of penicillin:

The reactions of the public and the medical profession to the advent of an important new drug were practically identical in the two periods. The lower toxicity of penicillin and the rapid appearance of a number of other antibiotics accounted for the lack of a revulsion against penicillin such as occurred against arsphenamine. Aside from this, the circumstances were similar and they engendered similar reactions. In spite of some lapses, technology had learned something from the past, but human nature had not changed.

THE WILLIAM OSLER MEDAL ESSAY

A CONFLICT OF PROFESSIONS: THE MEDICAL MISSIONARY IN CHINA, 1835-1890

THERON KUE-HING YOUNG*

On October 26, 1834, there arrived in Canton an American by the name of Peter Parker.¹ A native of Framingham, Mass., and graduate of the Yale Medical School, he was to become the first of the "Medical Missionaries" from the Christian West to have reached the gates of China. The Rev. Dr. Parker, however, was not the first Western physician, nor the first Protestant missionary in China. But it was only after 1835 that the two functions were combined. In 1838, the Medical Missionary Society in China, the first of its kind in the world, was formally founded.

In a manifesto drafted by Thomas Colledge, Peter Parker, and Elijah Bridgman, the originators of the Society spelt out the aims that they wished to achieve:

Viewing with peculiar interest the good effects that seem likely to be produced by medical practice among the Chinese, especially as tending to bring about a more social and friendly intercourse between them and foreigners, as well as to diffuse the arts and sciences of Europe and America, and in the end introduce the Gospel of our Saviour in place of the pitiable superstitions by which their minds are now

*The present essay is a part of the result of three months' research done at the Medical, Osler, Divinity, and MacLennan Libraries of McGill University during the summer and fall of 1971, supported by a grant from the Faculty of Medicine. I would like to extend my gratitude here to Professor Donald G. Bates for his encouragement, the Faculty Summer Grants Committee for their generosity, and the staff of the various libraries for their tolerance. And, from Henry Sigerist, who said: *Those who wait for inspiration for writing usually do not get it. When one has studied a subject and is full of it, then the empty white paper exerts an irresistible fascination and the words just drop out of your fountain pen . . .* I beg to differ!

¹ The definitive biography of Parker is George B. Stevens, *The Life, Letters, and Journals of the Reverend and Honorable Peter Parker, M.D., Missionary, Physician, Diplomatist, the Father of Medical Missions, and Founder of the Ophthalmic Hospital in Canton* (Boston: Congregational Sunday School & Publishing Society, 1896). Parker's own "Journals," some ten manuscript volumes, are in the possession of the Yale Medical Library. A list of Parker's publications and "memorabilia" is given in S.C. Harvey, *Yale J. Biol. & Med.*, 1936, 8: 241. A brief biographical sketch, together with selected illustrated case histories is provided in C. J. Bartlett, *J.A.M.A.*, 1916, 67: 407. While a medical student at Yale, Parker also attended lectures in theology but did not receive a degree from the Divinity School.

governed, it was resolved to attempt the foundation of a society to be called the Medical Missionary Society in China.²

In the half-century after Parker's arrival and the formation of the Society, the work of the medical missionaries slowly progressed and expanded, having weathered several major international crises and internal upheavals. After the Opium War of 1839-42, medical missions were extended from Canton to the newly opened "Treaty Ports." With the conclusion of another war, 1856-60, this time against an Anglo-French alliance, Christianity was formally tolerated, further ports opened, and access to the interior granted.³ This was followed by an upsurge in the number of medical missionaries dispatched to China. In 1886, the "China Medical Missionary Association" (not to be confused with the Medical Missionary Society founded in 1838) was conceived in an effort to coordinate the medical work of the numerous missions that had sprung up throughout the country. In 1890, the first general meeting of this Association was held in Shanghai, and thus concluded a period during which the medical missionary movement became firmly established in China.

The medical missionary was but one facet of the "Christian Presence" in nineteenth-century China. Medical work, as originally designed, was to be a means to an end, namely, religious conversion. It was but one of many means; others included education, social reform, and relief work. However, by virtue of his dual professional affiliations, the medical missionary frequently found himself unable to carry out his evangelistic assignments to the satisfaction of his missionary overseers at home, or his own conscience. He became a classic embodiment of the age-old struggle between "bodies" and "souls." In China, this conflict was magnified as a result of the phenomenal success—in the medical respect—of the medical missionary, in contrast to the dismal failure of Christianization in general. Despite the unprecedented deployment of missionary manpower and resources, at no time did the number of

² T. R. Colledge, P. Parker, & E. C. Bridgman. "Suggestions for the formation of a Medical Missionary Society offered to the consideration of all Christian nations, more especially to the kindred nations of England and the United States of America," *Chinese Repository* (Canton), 1836, 5: 370-372. Bridgman was the first American missionary to China, and Colledge, also known as "the Chinaman's Friend," was an East India Company surgeon.

³ For a treatment of the Treaty of Tientsin (1858) and Convention of Peking (1860) as they relate to the missionary movement, see K. S. Latourette, *A History of Christian Missions in China* (New York: MacMillan, 1929), p. 274, and C. K. Wu, *The International Aspect of the Missionary Movements in China* (Baltimore: Johns Hopkins Press, 1930), p. 250.

Chinese converts exceed 1% of the population.⁴ Yet, on the other hand, the medical missionary had injected modern techniques and scientific concepts into a hitherto stagnant native medical system, and through his particularly energetic educational endeavours, created a whole new profession of medicine in China, which continues to thrive to the present day.

It is the aim of the present paper to approach the medical missionary in China within the period 1835-1890 as a manifestation of the professional conflict between medicine and religion. In developing this theme I shall document some of the reactions of the two professions in the "home countries" to the phenomenon of the medical missionary, and trace the evolution of their attitudes and policies towards this unique entity, who claimed allegiance to both of them half a world away. Since medical missions were not employed to any great extent by the Catholic Church, the discussion will be limited to the Protestant missionary societies from the United States and Great Britain.

The Medical Missionary as Evangelist

Medical missionaries had always dated their origin to Jesus Christ, "The Master Healer." But in modern times, the emergence of the medical missionary could safely be said to begin with the eighteenth century.

In 1701 it was recorded that a General Codrington of Barbados bequeathed two plantations to the Society for the Propagation of the Gospel in Foreign Parts, an Anglican missionary body, so that "three hundred negroes, at least, be always kept thereon, and a convenient number of professors and scholars maintained there, who are to be obliged to study and practise physic and chirurgery as well as divinity, that by the apparent usefulness of the former to all mankind they may both endear themselves to the people, and have the better opportunity of doing good to men's souls while they are taking care of their bodies."⁵

Here was the earliest reference to the establishment of a medical mission. The honor of being the world's first medical missionary, however, probably goes to one Dr. Kaspar Gottlieb Schlegemilch, who went to India in 1730 under Danish and German auspices, but alas, died

⁴ Jessie Lutz (ed). *Christian Missions in China, Evangelists of What?* (Boston: Heath, 1965), p. vii.

⁵ "Medical missions," *Brit. & Foreign Med.-Chir. Rev.* (London), 1875, 56: 307-326. Note that Codrington's grand plan never did come to fruition in so far as medical training was concerned.

of dysentery one month after his arrival. In 1793, John Thomas, a veteran ship surgeon with the East India Company, returned to Bengal as a Baptist missionary. The first American medical missionary was John Scudder, who went to Ceylon in 1819.⁶

These, however, were isolated events. It was only after Parker's initial success in China that medical missions became an international movement. Thus, in 1861 there were only twenty medical missionaries in the world. This number rose to between 90 and 100 in 1878, and by the end of the eighties, there were 300.⁷

In June, 1834, three months after receiving his M.D. degree and one month after his ordination as a Presbyterian minister, Peter Parker set sail for China, having secured an appointment from the American Board of Commissioners for Foreign Missions (hereafter A.B.C.F.M.), the oldest and largest of the American missionary societies. He arrived at Canton in October, but in December he left for Singapore to learn Chinese, where in the meantime he also opened a dispensary. In November, 1835, Parker returned to Canton and opened the first missionary hospital.⁸

Even while he was in Singapore, Parker was engrossed in the medical aspect of his work. He was fully aware of his negligence of the religious side of his mission:

I read last evening my instructions from the Board, and not without grief to find that, in the deep-growing interest I have felt for the sick and dying among the Chinese, I have in a degree deviated from those instructions . . . and have become involved in medical and surgical practice in a manner that I know not how to extricate myself.⁹

What were his instructions? At the farewell ceremony in New York, Parker was explicitly told by his superiors:

The medical and surgical knowledge you have acquired, you will employ, as you have opportunity, in relieving the bodily afflictions of the people. You will also be

⁶ For a general history of the early medical missionaries, see M. P. Barker, "Medical missions in heathen lands," *Med. & Surg. Reporter* (Philadelphia), 1883, 48: pp. 2-5, 29-32. Also E. M. Dodd, *Gift of the Healer, the Story of Men and Medicine in the Overseas Missions of the Church* (New York: Friendship Press, 1964), p. 14.

⁷ These figures were quoted by John Lowe, in James Johnston (ed), *Report of the Centenary Conference of the Protestant Missions of the World* (London: Nisbet, 1888), vol. 2, p. 107.

⁸ Peter Parker. "Ophthalmic hospital at Canton: first quarterly report from 4th. November, 1835, to 4th. February, 1836," *Chinese Repository*, 1836, 4: 461-473.

⁹ Stevens, *Parker*, p. 111.

ready, as you can, to aid in giving them our arts and sciences. But these, you will never forget, are to receive your attention only as they can be made handmaids to the gospel. *The character of a physician, or a man of science, respectable as they are, or useful as they may be in evangelizing China—you will never suffer to supersede or interfere with your character of a teacher of religion* [italics added].¹⁰

Parker was troubled greatly, and by June, 1835, he experienced a "darkness of spirit," and had to resort to weeping "by day and night in secret places." Guilt-ridden, he confided to his journal: "While anxious to benefit the bodies of the hundreds that weekly come to me, I have not yet raised an ejaculation to heaven in behalf of their souls." Finally, came a confession: "I partake too much of the spirit of the more worldly physician and not enough of the Christian, minister, and missionary of the cross of Christ."¹¹

In May, 1836, with the work of the new hospital in full swing, Parker again wrote:

I have so much labor to perform for my numerous patients that I have not as much leisure to converse with them and to improve the opportunities that present of making known my errand among them. I must therefore be more on my guard lest the adversary by busying me about the body prevent my depriving him of some of these souls.¹²

This conflict in roles, the difficulty in striking a balance between the demands of the physician and those of the evangelist, would continue to plague Parker and indeed all the other medical missionaries that came in his footsteps.

Parker's overemphasis on medical work did not meet with the approval of his superiors at home. They finally came to a breach in 1843 when Parker, by virtue of his intimate knowledge of the Chinese, was made secretary and interpreter to the first U.S. Minister Plenipotentiary, Caleb Cushing. The Board of Commissioners took a dim view of this new digression and withdrew their support of Parker in 1845. Parker's friends rallied to his defence, as can be seen in the following letter from the U.S. Naval chaplain, Rev. I. W. Newton, to the Secretary of the Board, Rev. Rufus Anderson:

The surgeon is himself a preacher and makes his hospital a chapel. But that is not all; he gives them Christian books with his prescriptions. But there is more in it

¹⁰ *Ibid.*, p. 82.

¹¹ Parker, "Journals," entries for June 12, August 15, and October 18, 1835. Quoted by J. D. Spence, "Peter Parker, Bodies or Souls," in *To Change China, Western Advisers in China* (Boston: Little, Brown, 1969), pp. 41-2.

¹² *Ibid.*, entry for May 1, 1836. Quoted in Spence, *op. cit.*, p. 41.

than that; his medical practice is itself preaching; in the very act of amputating a limb, in his way, he tells them of Him who said, "I will be their healer." The story of the hospital and its 20,000 patients is Gospel, for what else can they think of it?¹³

And, with regards Parker's diplomatic assignment, Newton suggested that it could only aid the Mission because the Chinese "attach importance to promotion under government," and reminded Anderson that the privileges then enjoyed by the U.S. were mostly due to Parker, who had Cushing's complete confidence.

To understand the behavior of the A.B.C.F.M. towards Parker, one should take into account the current attitude among missionary circles that a medical missionary should be auxiliary to the regular, clerical missionary. The by-laws of the Board, for example, defined a "Missionary" as "one who has been ordained a minister of the gospel, and has actually come under its direction. All others—licensed preachers, *physicians*, schoolmasters, printers, etc.—are assistant missionaries" (*italics added*). With respect to the physicians, they "were all expected . . . to make their medical practice subservient to the grand object of the mission." And since "the employing of missionary physicians [grew] mainly out of the practice of employing married missionaries" it should follow that "their first care was of the mission families." Moreover, they were "expected to exert a conciliatory influence among the natives by the kindly offices of their profession. They [had] not been sent where the needful medical attendance was believed to be otherwise attainable."¹⁴ This was the official attitude of the Board, as expressed by Secretary Rufus Anderson and published in 1861 in the fiftieth anniversary memorial volume of the A.B.C.F.M. It was not until 1885, at the seventy-fifth anniversary, that an official change in policy could be detected. The then Secretary, Judson Smith, D.D., addressed the Board's annual meeting:

The work of the medical missionary has assumed increased importance during the last decades of our history; and in many fields, like China and Japan, the physician exerts a Christian influence only second to that of the ordained missionary. . . . The conditions of the first proclamation of the gospel are in some measure reviewed; and a skillful and sympathetic ministry to the bodies of the sick and infirm in

¹³ This letter, dated January 22, 1846, Canton, is quoted in W. W. Cadbury and Mary H. Jones, *At the Point of a Lancet, One Hundred Years of the Canton Hospital* (Shanghai: Kelly, 1935), pp. 96-8.

¹⁴ Rufus Anderson. *Memorial Volume of the First Fifty Years of the American Board of Commissioner for Foreign Missions* (Boston: A.B.C.F.M., 1861), p. 270.

numerous instances opens the heart and conscience to the supreme gift of salvation. *This arm of our missionary service we shall increase* [italics added] . . . until the special demand is substantially met; we rejoice to note the increasing number of Christian physicians, men and women, who are offering themselves to this noble service.¹⁵

A similar development can be observed in other missionary bodies, such as the Church Missionary Society (C.M.S.), missionary wing of the Church of England.

Shortly after the conclusion of the Opium War, the C.M.S. instructed two agents—the Revs. George Smith and T. McClatchie—to travel to the five Treaty Ports and explore the possibility of establishing missionary stations. Smith's report contained a wealth of information on Chinese geography, history, and ethnography, but of particular interest was his opinion on medical missions.

After visiting Parker's hospital in Canton, Smith was much impressed, and declared that "at the present time [i.e. 1847] the Missionary Hospital is the most hopeful agency for effecting good on an extensive scale, by disposing the minds of rulers and people most favorably towards foreign teachers."¹⁶ On the island of Chusan, off the coast of Shanghai, Smith had the opportunity to distribute some medicines, and was delighted when his grateful beneficiaries accepted his Christian literature. Smith wrote:

These little occurrences served to deepen in my mind a conviction of the importance of medical missionary efforts *when kept in their subordinate state as mere subsidiary means in preparing the way for Christian evangelists in that heathen land* [italics added].¹⁷

In 1850, the first C.M.S. medical missionary, William Welton, was dispatched to Foochow.

At home, medical missions slowly began to attract the attention of the Church hierarchy in the early sixties. According to Stock's official history of the C.M.S., at the annual Congress of the Church of England held at Oxford in 1862, "Dr. (later Sir Henry) Acland urged the

¹⁵ I was led to this statement by Dodd, *op. cit.* (n. 6 above), p. 25, who quoted but did not cite its source. The original address, entitled "The future work of the American Board," was published in full in the *Commemorative Volume in Connection with the 75th Anniversary of the A.B.C.F.M.* (Boston, 1885), p. 83.

¹⁶ George Smith. *A Narrative of an Exploratory Visit to Each of the Consular Cities of China and to the Island of Hongkong and Chusan, in Behalf of the Church Missionary Society, in the Years 1844, 1845, 1846* (London: Seeley, 1847), p. 123.

¹⁷ *Ibid.*, p. 321.

importance of Medical Missions, which in those days was not at all realized."¹⁸ Throughout the decade from 1873 to 1882, missions occupied a definite place in these Congresses. At Derby in 1882, "The Organization of Native Churches, Missionary Centres, and Medical Missions" was the topic under discussion.¹⁹ In Shrewsbury, 1896, Dr. C. F. Harford-Battersby read papers on the training of medical missionaries.²⁰

It was after 1882 that "the Society [began] to consider seriously the importance of Medical Missions. In 1883 it had established one in Persia, two in Punjab, one in Kashmir, two in China. . . . *But such work was still regarded as only suitable in certain circumstances, and there was no intention to take it up on any large scale*" (italics added). Indicative of the official viewpoint in those times was the Rev. Gray's inquiring in the *Intelligencer* why "an expensive medical agency" should be employed in places where the ordinary missionaries already had free access to the people.²¹

A sub-committee was appointed to consider the subject of medical missions. Its report was completed in 1885 and suggested four circumstances under which Medical Missions were desirable:

- a. in a country where the Gospel cannot freely be preached by ordinary evangelists;
- b. in the case of aboriginal and uncivilised peoples likely to be specially impressed by the benevolent influence of medical work, particularly where medical aid cannot be obtained for the people from the Government;
- c. when there are special opportunities, or a special call for training native medical evangelists;
- d. where there is a strong missionary centre, with a large body of clerical missionaries, to whom a medical colleague may form a valuable auxiliary.

Among the other resolutions in the report, it was emphatically stated that "the medical work should always be subordinate to the spiritual." It also considered the "importance of sparing the General Fund a heavy expenditure upon medical and surgical requirements and appliances, and in view of the readiness with which many persons [would] contribute for such objects who [would] not contribute to general missionary work," a separate Medical Missionary Auxiliary Fund was

¹⁸ Eugene Stock. *The History of the Church Missionary Society, Its Environment, Its Men, and Its Work* (London: C.M.S., 1899), vol. 2, p. 356.

¹⁹ *Ibid.*, vol. 3, p. 12.

²⁰ *Ibid.*, vol. 3, p. 645.

²¹ *Ibid.*, vol. 3, p. 309. The Rev. Gray was the Society's Secretary for Indian Affairs. The *Intelligencer* was the official publication of the C.M.S.

set up, and an Auxiliary Committee appointed. Five years later, a full Medical Department was finally formed, raising medical missionary work from the "auxiliary" status.²²

While decisions were made on missionary policies in the "home offices," the topic of medical missions also came up for debate in missionary publications. The worth of medical missions as evangelistic agencies came under the careful scrutiny of the strictly "clerical" missionaries working in the field. Thus, the Rev. W. T. Morrison, in an article to the *Chinese Recorder & Missionary Journal*, mentioned a generally overlooked fact:

If we inquire how far these institutions are useful as a means of Christianizing the people, we will be greatly disappointed, if we have been led to expect large results. While we may thankfully observe the few cases of conversion among these [patients], we must admit that [they] bear a very small proportion to the thousands that have been in the hospital wards.²³

In 1874, the Rev. William Scarborough, who for ten years had been connected with the Wesleyan Hospital at Hankow, published a general history and critique of medical missions in the same journal. Under the sub-heading "The Good Which They Undeniably Accomplish," he included the effect medical missions had on the foreign community in China in "developing a princely liberality" among the businessmen; the demonstration of scientific principles to native doctors; and the acquisition of anthropological data for the foreign scholar. None of these was related to evangelistic work, although he did mention that medical missionaries were useful in opening a new mission. Even so, he qualified his statement:

It is true that the people soon became conciliated, when they find something to be given to them gratis that will do them good; since, however, this is appealing to the low motive of selfishness, I am inclined to consider the good done in this manner among the smallest benefits of medical missions.²⁴

The above good points were "beyond dispute," but in the next section, under the rather provocative heading "The Good Which They Are Supposed to Accomplish," the very *raison d'être* of the medical missionary came under doubt. It was commonly believed that they allayed prejudice, but this was "a matter of opinion, not a matter of

²² *Ibid.*, vol. 3, p. 310.

²³ W. T. Morrison, "Medical mission work in China," *Chinese Recorder*, 1869, 1: 178-80.

²⁴ W. Scarborough, "Medical missions," *Chinese Recorder*, 1874, 5: 137-152.

fact." Scarborough cited an incident in Canton, where patients could still believe in rumours that they were poisoned by the missionaries, despite the fact that the missionary hospital had been in existence for over thirty years. That the medical missionaries won confidence was not necessarily a blessing, since "blind and ignorant confidence" in the omnipotent doctor was more harmful than beneficent. That they excited gratitude among the natives was by no means general, though such instances were not rare. Finally, that they brought about conversion was more fiction than fact. "As a converting agency, . . . the hospital had been a failure." In twelve years of the operation of the Medical Missionary Society in Canton, there were a mere 12 converts from a total of 409,000 patients.²⁴

More criticisms were revealed in the final instalment, under the title "On the Dangers that beset them." The Rev. Scarborough feared that some of the medical missionaries were not suitably qualified: "A medical missionary is not only a medical man, but something very much *higher*. . . . Skill in medicine is his lowest qualification" (italics added). He also frowned upon the usual practice in medical missions where the actual preaching were delegated to the clerics, "a disposition to regard the medical department as something more secular than the rest of the mission, something more scientific than religious." Too much reliance on native dispensers and the tendency to drift into private practice were two other dangers that medical missionaries should be on guard against.

The medical missionaries did not let such charges go unanswered. William Gauld of Swatow refuted Scarborough point by point in a letter to the *Recorder*.²⁵ From time to time they did not hesitate to use the printed word to reiterate that they were bona fide evangelists.²⁶

Perhaps the most eloquent of the medical missionaries was William Lockhart, a veteran worker in China since 1839 and the first to open mission hospitals in Shanghai and Peking. He did not see the need to justify his emphasis on medicine at all, arguing that "if the medical missionary [were] ordained, either a good surgeon or a good pastor was spoiled." He ought to "have no responsibility as a pastor, or he

²⁵ W. Gauld. *Chinese Recorder*, 1875, 6. 47-56.

²⁶ For example, see J. Dudgeon, "Medical mission work as an evangelistic agency," *Chinese Recorder*, 1884, 15: 1-18, and J. K. MacKenzie, "The evangelistic side of a medical mission," *Chinese Medical Missionary Journal*, vol. 1, no. 1, reprinted in Mary Bryson, *John Kenneth MacKenzie, Medical Missionary to China* (New York: Revell, n.d.), pp. 396-404.

[would] become distracted from his own line of operation, and thus be less willing to undergo the drudgery of his hospital; without the continuous work and effort there, he [could] not expect to have a wide influence."²⁷ These words were found in the preface to his opus magnum, *The Medical Missionary in China*, written while he was on furlough in England. In the text itself, he further elaborated on this theme:

I should therefore recommend in every case that the medical missionary be a layman, and sent out *on an equal footing with the ordained missionary*. For the same person to attempt both these lines of duty is to insure more or less of failure in the one or the other. . . . This, of course, will not prevent a medical missionary from the accomplishment of much general missionary work. His office is that of a missionary; he will take every opportunity of Bible distribution, and avail himself of the occasions, peculiarly his own, of speaking to his patients privately . . .²⁸ [italics added].

Lockhart's approach to the allocation of duties was adopted by most other medical missionaries. For example, his successor in Shanghai, James Henderson, though "frequently asked to help in conducting the services in the London Mission Chapel, . . . did not usually preach, preferring to read a first-rate printed sermon" instead!²⁹

There was, however, one remarkable exception in the person of Harold Schofield, who went out of his way to engage himself in active preaching. Schofield was all the more unusual in that he abandoned a brilliant career at St. Bartholomew's and signed up with the China Inland Mission.³⁰ This society, incidentally, was the single largest missionary body operating in China and was founded by J. Hudson Taylor, a medical man himself. Sent to remote Shansi province, Schofield worked diligently and "although enthusiastic in his profession, he always kept the more directly spiritual part of his work in view, not only conducting the daily morning service for the patients himself,

²⁷ William Lockhart. *The Medical Missionary in China, a Narrative of Twenty Years Experience* (London: Hurst & Blackett, 1861), p. vi.

²⁸ *Ibid.*, p. 115.

²⁹ *The Life of James Henderson, Medical Missionary to China* (New York: Carter, 1873), p. 152. This is a compilation of Henderson's unfinished autobiography, extracts from his notebooks, letters, and recollection by his contemporaries. The name of the editor of the volume is not known.

³⁰ Schofield studied at Manchester, received his B.A. and B.Sc. degrees from London University and a first class Honours at Oxford. He qualified in medicine from Barts and won the Radcliffe Travelling Scholarship to Vienna and Prague. His obituary appeared in the *Lancet*, 1883, 2: 711.

but in the Sunday meetings, in the street-chapel, tea-shops, or crowded thoroughfares."³¹

The final recognition of the work of the medical missionary came belatedly in 1888, when the World Missionary Conference was held in London, attended by representatives from most of the Protestant missionary groups in the Western world. Medical missions were given a prominent place in the Conference's proceedings; a total of three sessions were devoted to them. From the published reports of this gathering there appeared little real debate on the subject. There was general agreement that medical missionaries should not be regarded as second-class citizens in the missionary world. The prevailing sentiment was best expressed by the Rev. John Lowe, F.R.C.S.E., and Secretary of the Edinburgh Medical Missionary Society:

We hold that the true Medical Missionary is as much the ambassador of Christ . . . as much the preacher of the everlasting gospel as is his ordained clerical colleague. . . . We ask to be sent into the Mission-field in order that we may do the work of an evangelist. We ask that Medical Missions be recognized by our Missionary Societies, and our Churches, not merely as a benevolent agency, not as an occasional auxiliary to Missionary work, but as an embodiment of the Divine idea . . . when he commanded the Gospel be preached among the nations.³²

Lowe also defended the not infrequent accusation of the poor conversion statistics coming from medical mission stations:

If it can be truthfully said of any Medical Mission that in spiritual results it is not so fruitful as we might expect it to be, we have no hesitation in saying that the fault is not in the *agency* [Lowe's italics] nor with rare exceptions in the agent, but in the exceedingly limited resources placed at his disposal wherewith to carry on the work.

Lowe's address serves as a convenient point to conclude the discussion on medical missions as viewed by the profession of the cloth. In the following pages, the attitude of the medical profession towards missionary doctors during the same period of time will be examined in turn.

The Medical Missionary as Physician

In contrast to the initially lukewarm reception of the medical missionary by the Church authorities, the medical profession in general

³¹ M. G. Guinness. *Story of the China Inland Mission* (London, 1900), vol. 2, p. 424.

³² James Johnston (ed), *op. cit.* (n. 7 above), vol. 2, p. 104ff.

was enthusiastic right from the very beginning. Glowing reports on medical missionary work could frequently be found in the British and American medical press of the day.³³ Soon after Parker's establishment of his hospital, the *London Medical Gazette* noted:

An hospital has been lately established at Canton, by an American surgeon and missionary, the Rev. P. Parker, for the gratuitous relief of afflicted Chinese. Several important operations have been performed, which have created considerable excitement among the Chinese, whose ignorance of surgery and medicine is said to be extreme. Such an institution may lead to the opening of an extended intercourse with the singular people, of which we as yet know so little.³⁴

In the U.S., the *Boston Medical and Surgical Journal*, for example, considered Parker a proud son of Massachusetts and provided regular bulletins on his progress in its pages. Thus, in 1837 the *Journal* declared:

The A.B.C.F.M. have acted very wisely in taking into its service physicians and surgeons, who are usually received with marks of distinction, as benefactors, in those benighted regions where moral darkness can never be dispelled, till the mild influences of Christianity are introduced by unobtrusive means. The physician rarely fails to secure the confidence of the wildest savage.³⁵

After the formation of the Medical Missionary Society in Canton, the journal took an active part in publicizing the objectives of the Society, and volunteered to be a clearing-house in handling applications from American physicians.³⁶ The periodic lists of American medical missionaries serving overseas under the A.B.C.F.M. were further indications of this journal's unswerving belief in medical missions.³⁷

In London Sir Henry Hallford, President of the Royal College of Physicians, delivered an address to an audience composed of many of the high echelons of British society in 1838, and came out in favor of medical missions. Among those present were the Duke of Cambridge, the Archbishop of Canterbury, the Duke of Wellington, Sir Robert Peel, and "many distinguished members of the Church, the bar, and the senate." Sir Henry pointed out:

³³ Some of the reports on remarkable cases can be found, for example, in *Lancet*, 1837, 2: 608; *Boston Med. & Surg. J.*, 1837, 15: 29, 1839, 19: 410, 424; *New York Lancet*, 1842, 1: 108, 125, 202; *Edin. & London Monthly J. Med. Sci.* 1846, 6: 393-398.

³⁴ *London Med. Gaz.*, 1838, 23: 432.

³⁵ *Boston Med. & Surg. J.*, 1837, 15: 384.

³⁶ *Boston Med. & Surg. J.*, 1839, 19: 432.

³⁷ *Boston Med. & Surg. J.*, 1837, 15: 384; 1842, 25: 403; 1847, 35: 540; 1851, 45: 438.

The Chinese received vaccination kindly . . . and since that time, they have allowed missionaries from America to establish an ophthalmic institution and also a general dispensary. . . . Undoubtedly the Chinese practice of physic is so meagre, and inadequate, as to give an easy superiority to the commonest pretension of European knowledge.

With those who practise upon such a system, if system it can be called, is it possible that . . . the English medical practitioner should come into competition without the greatest advantage in his favour. . . . And it is in this condition that I humbly propose, that those who are to be educated to become missionaries, after having had their minds thoroughly imbued with moral and religious principles in their first scholastic discipline, shall then attend to anatomy and chemistry, and the other courses of medical lectures, and for a certain time frequent some of the great hospitals, so as to qualify themselves to practise physic and surgery, as if they were to prosecute our profession as a means of living. . . . The Americans seem disposed . . . to keep separate civil and clerical characters. . . . Now confidence is not transferrable, and it does not follow that the impression of gratitude and attachment which the medical man shall have made by his successful administration to disease, will be given necessarily, and of course, to a stranger, introduced to explain what is required for the salvation of the soul. I hold it, therefore, far preferable that the two characters be united in those whose zeal for the benefit of mankind may cause them to remote parts of the world.³⁸

It was a memorable speech, as it represented a stamp of approval from someone at the top of the medical hierarchy. The missionaries never hesitated to quote this speech in support of their cause. Peter Parker was delighted when he read the article in Canton, and specially mentioned it in his first annual report.³⁹ The scholar-missionary Medhurst quoted it at length in his work on China, saying that it was "gratifying to see that this subject has begun to attract attention in high and influential quarters."⁴⁰ It was also utilized in the lectures given by the Edinburgh Medical Missionary Society (*vide infra*, p. 264) to medical students and prospective medical missionaries.⁴¹

³⁸ Sir Henry Halford. "On some of the results of the successful practice of physic," Address to the Royal College of Physicians, reported and abstracted in *London Med. Gaz.*, 1838, 21: 774-777.

³⁹ Peter Parker. "First annual report of the Medical Missionary Society in China," *Chinese Repository*, 1838, 7: 419-422.

⁴⁰ Walter Henry Medhurst was originally sent to Malacca as a printer in 1817. He was ordained 2 years later. Regarded as an expert on China and the Chinese language, he had revised the Chinese Bible and compiled a dictionary. Halford's speech was quoted in his book *China, Its State and Prospects with Especial Reference to the Spread of the Gospel* (London: Snow, 1838), p. 548.

⁴¹ *Lectures on Medical Missions Delivered At The Instance Of The Edinburgh Medical Missionary Society* (Edinburgh: Sutherland, 1849), p. 123.

Another example of the medical profession's acceptance of the concept of medical missions was the reception given to Parker when he made a grand tour of the U.S. and Europe after the Opium War had broken out and his hospital practice was interrupted.

In June, 1840, Parker left Canton for America. Besides visiting his family, he went to Washington and talked to the President, and even preached to Congress "exhibiting to that assembly the moral condition, as well as the prospects of China generally, and those of the [Medical Missionary] Society incidentally." He traveled throughout New England, spoke in medical schools and theological seminaries as well as before the "lay" public. He pleaded his cause and asked for donations. In Boston, for example, he secured a permanent fund amounting to \$5550. In April, 1841, he addressed and was enthusiastically received by the Boston Medical Association, which pledged assistance and resolved to appoint a committee on medical missions.⁴²

Parker also crossed the Atlantic. In Paris he had a sympathetic audience with Louis-Philippe. In the British Isles he made speeches in the major cities, met dignitaries, and raised funds (about \$225 in London). He was a celebrity and everywhere he went the response was favorable, except in one instance when he was courteously told by the Bishop of London that "much as he approved of the object and means . . . he could not in any way cooperate in such labours with those who dissent from the Established Church."⁴³ In Edinburgh a committee was formed to found a medical missionary society similar to the one Parker co-founded in Canton. Thus in 1841 the "Edinburgh Association for Sending Medical Aid to Foreign Countries" was founded. It later changed its name to "Edinburgh Medical Missionary Society" (E.M.M.S.),⁴⁴ an organ instrumental in the rapid rise of the medical missionary on an international scale.

The chief aims of the E.M.M.S. were to rouse in the public an interest in medical missions, solicit funds, and channel them to individual missionaries for the purchase of medicines and instruments. In the 1850s it began to supply the various missionary bodies with qualified agents from among the medical graduates whose education it had financed. It had twelve students under its auspices in 1867, and by

⁴² *Boston Med. & Surg. J.*, 1841, 24: 176-8.

⁴³ Parker's activities abroad were included in a pamphlet, "Report of the Medical Missionary Society containing an abstract of its history and prospects . . . together with Dr. Parker's statement of his proceedings in England and the United States," which was reviewed and abstracted in *Chinese Repository*, 1843, 12: 191.

⁴⁴ *London & Edin. Monthly J. Med. Sci.*, 1843, 3: 267.

1899 this number was doubled.⁴⁵ In 1875 it was reported that "the demand for suitable and well-qualified men is greater than the supply" as the Society had before it ten applications which it was unable to meet.⁴⁶

At its inception, the E.M.M.S. was termed "a very laudable undertaking" by the *London Medical Gazette*, which also published the Society's list of objectives.⁴⁷ Further evidence of the support of the medical profession was the fact that the Society had enlisted as its officers some of the cream of Edinburgh medicine. In 1855, for example, its President was William Brown, F.R.C.S.E. and F.R.S.E. One of the three vice-presidents was the Professor of the Practice of Physic, W.P. Alison, M.D., F.R.S.E. Serving on the Committee, which consisted of 36 members (16 "medical," 6 "clerical," and 12 "lay") were James Miller, F.R.C.S.E., F.R.S.E., Professor of Surgery and Surgeon to the Queen in Scotland, and John Hutton Balfour, M.D., F.R.S.E., Professor of Medicine and Botany.⁴⁸ Sir James Simpson was also "among those who had been its friends."⁴⁹ In 1882 the *Edinburgh Medical Journal* offered its services in issuing a pamphlet on the E.M.M.S. and distributing it to "every medical man in the three kingdoms."⁵⁰

Other similar organizations were founded, based on the model of the Edinburgh society. In 1878, the London Medical Missionary Association, and in 1881, the International Medical Missionary Society (New York City), were organized.⁵¹

Apart from these societies, aspiring medical missionaries were supported financially through their medical training by scholarships. For example, when Parker visited London in 1841, the Royal College of Surgeons pledged to undertake the educational expenses of Chinese youths, and also three scholarships were founded at King's College for the training of medical missionaries.⁴⁹ In 1885 the Society for the Promotion of Christian Knowledge offered studentships tenable for four years at £150 per annum. Medical men willing to study towards

⁴⁵ These figures were given in the section on "The Edinburgh Medical Missionary Society" in *The Missionary Yearbook for 1889* (London: Religious Tract Society, 1889).

⁴⁶ *Brit. & For. Med-Chir. Rev.*, 1875, 56: 326.

⁴⁷ *Lond. Med. Gaz.*, 1845, 35: 805.

⁴⁸ The list of Officers was published as an appendix in J. H. Balfour, *Biographical Sketch of the Late Dr. Golding Bird, Being an Address to Students delivered at the Request of the Edinburgh Medical Missionary Society* (Edinburgh: Constable, 1855).

⁴⁹ *Brit. & For. Med-Chir. Rev.*, 1875, 56: 313.

⁵⁰ *Edin. Med. J.*, 1882, 27: 955.

⁵¹ J. A. Cutter. "Some facts regarding Medical Missions and the International Medical Missionary Society," *Albany Med. Annals*, 1888, 9: 135-8.

ordination, clergymen willing to qualify medically, and those willing to do "lay" mission work were eligible.⁵² In the U.S. a Dr. William H. Thomson established in 1876 seven scholarships at the University of the City of New York for students who were to become medical missionaries.⁵³

Against this sea of approval shown by the medical "establishment" and its press, the *Lancet* was at the very beginning skeptical of the whole notion of doctors serving a religious cause. Shortly after Parker gained a foothold in Canton, the London Missionary Society began to advertise in English medical journals for qualified medical missionaries. The following excerpt from the *Lancet* is indicative of this journal's attitude:

A copy of an advertisement from the "Directors of the London Missionary Society" . . . has been sent to us for notice in this place. The Directors of the Society announced that they are desirous of making the talents of highly qualified medical men, good operative surgeons, subservient to the introduction of Christianity among the immense population of China, and that they wish such men to pioneer the way for their missionaries. . . . Without at present expressing any opinion on the *propriety* of attempting to carry this project into effect . . . we feel assured, however, that *no members of our profession . . . will hastily close with the proposals which the Society have to make* [italics added].⁵⁴

The *Lancet's* coolness did not go unnoticed. In a letter to the Editor, signed by "A Tyro in the Profession," a complaint was launched:

On two or three occasions lately, I have seen in the *Lancet* advertisements and proposals for sending medical men to China, in connexion with which there have been *editorial remarks of a decidedly dissuasive character*. . . . It appears to me, Sir, that the projectors of this scheme, as you are pleased to call it, would raise the medical profession, if not to an intellectual, certainly to a moral elevation to which it had never before attained. . . . I regret that my probationary period has so long to expire . . . but to all my professional brethren, who consider themselves competent, I would appeal, and urge them . . . to stand forth individually, and aid in this laudable undertaking [italics added].

⁵² *Brit. Med. J.*, 1885, 2: 884. The Society for the Promotion of Christian Knowledge (S.P.C.K.), the Society for the Propagation of the Gospel in Foreign Parts (S.P.G.), and the Church Missionary Society (C.M.S.) were all missionary bodies of the Church of England. The first two were considered "High Church" and they were not as active in China as the C.M.S.

⁵³ E. M. Bliss, *The Encyclopedia of Missions* (New York: Funk & Wagnalis, 1891), vol 2, section on "Medical Missions."

⁵⁴ *Lancet*, 1837, 2: 490. The London Missionary Society is a non-denominational body, one of the largest and oldest in China. It sent the first Protestant missionary, Robert Morrison, to China in 1807. The first English medical missionaries, William Lockhart and Benjamin Hobson, were also from this Society.

The Editor's reply, equally revealing, was as follows:

We might publish the foregoing letter as a sample of the class which editors are often greatly condemned by the writers for keeping from the public view. . . . Without disputing any one of the propositions which he lays down, we may observe, that his views and philanthropic expressions would be just as apposite to the question if placed underneath the title of "Wales" or "Van Diemen's Land" or "Isle of Sky" as under that of "China." *Medical men must be influenced by some other considerations* than those contained in this panegyric on medicine, if any of them decide on accepting the proposals of the Missionary Society. We may add, that the above is the only communication professing to treat on the subject of medical missions to China, which we have received since the plan of the Society was made known in our pages [italics added].⁵⁵

Very little was said further on this matter in the *Lancet*, as there were no doubt far worthier targets among the high priests of London medicine to keep the indefatigable founder and editor of the journal, Thomas Wakeley, busy. The years passed, but Wakeley remained recalcitrant, as evident from an 1855 editorial titled "Medicine Independent of Theology." At that time there were among the medical profession people advocating the establishment of Christian medical associations to promote medical mission work among medical students, much along the same lines as the Edinburgh Medical Missionary Society. The *Lancet* viewed this with suspicion, and in very strong language denounced what the Editor believed was an ill-judged attempt to revive the hegemony of Religion over Medicine.⁵⁶

A refutation was promptly tendered by the Edinburgh group. Professor Balfour, in a lecture to medical students, countered-attacked:

In the *Lancet* . . . there is, I regret to say, an attempt made to decry the efforts of Christian Medical Associations such as our own . . . and [to present] a most erroneous view of our proceedings. . . . We have no wish to instil particular Church views. . . . We desire the good of medical students independent of all systems of Church government, and we repudiate all bigotry, intolerance or thralldom. We repel the insinuation, that we desire to exclude any man from our schools, or that we want to compel a student by unworthy motives of worldly benefits to adopt our views.⁵⁷

A change of tone in the *Lancet* came only after Wakeley's death (1862). Thus, in 1866 the journal published a favorable review of the

⁵⁵ *Lancet*, 1837, 2: 631.

⁵⁶ *Lancet*, 1855, 1: 44.

⁵⁷ J. H. Balfour, *op. cit.* (n. 48 above), p. 5-6.

reports from medical missionaries in China and India, and in 1882, a "highly appreciative editorial" on the Edinburgh Society, which was acknowledged by the *Edinburgh Medical Journal*.⁵⁸

Prompted by the success of medical missions overseas, many evangelically minded physicians in England decided to apply the same formula at home. In 1862, a meeting of the Christian Medical Association, chaired by A.D. Grainger, F.R.S., decided to form a committee "to arrange and carry out a plan by which the profession in England might contribute to the spread of Christianity by means of medical missions."⁵⁹ In 1866 a dispensary for the poor in Liverpool was opened.⁶⁰ The secretary of this mission, R. Hibbert Taylor, was "anxious to bring the subject [of medical missions] under the notice of the members of the British Medical Association" and announced his intention, in a letter to the *British Medical Journal*, to give an address entitled "Medical Mission in the Foreign and Home Aspects" for those attending the forthcoming B.M.A. annual meeting at Chester.⁶¹ London, with its labyrinth of slums, was fertile ground for a medical mission, and the establishment of one was proposed in a meeting at the Presbyterian college in 1869.⁶² In America, domestic medical missions were opened in Philadelphia (1879) and in Chicago (1885).⁶³

One should be careful in evaluating what appeared to be overwhelming support of medical missions by the medical profession at large. While the nineteenth century did not tolerate any frontal attack on religious institutions from members of a socially respected profession, many physicians supported medical missions in so far as they reflected the prowess and superiority of medicine and science. The *Boston Medical and Surgical Journal* editorial quoted above (p. 262) is a good example of self-congratulatory prose. Even the missionary societies admitted the fact that they received contributions for medical missions from people who would not otherwise support missions in general (above p. 257). Many took pride in the fact that Medicine succeeded where Religion failed in the winning of hearts. Some did not hesitate to sling a shot or two at organized religion. The following, which appeared in the *Transactions* of the College of Physicians in Philadelphia, is such an example:

⁵⁸ *Edm. Med. J.*, 1882, 27. 955.

⁵⁹ *Brit. Med. J.*, 1862, 2. 184.

⁶⁰ *Brit. Med. J.*, 1868, 1: 304.

⁶¹ *Brit. Med. J.*, 1866, 2: 82.

⁶² *Brit. Med. J.*, 1869, 2: 469.

⁶³ "Medical Missions," in Bliss, *Encyclopedia of Missions*, vol. 2.

... such a practical form of Christianity must appeal most powerfully to an intelligent nation which sees *its own ministers of religion ignorant and inactive* in remedying evils at their own doors, while a young American Christian physician leaves home and friends... for nothing but the love of his Master and his fellow-men, spends his life for their betterment [*italics added*].⁶⁴

Whereas the clergy always insisted that the medical missionaries be evangelists, the prevailing opinion among medical men was that they need not be so. Lockhart's view on this subject had already been mentioned (p. 260 above). Professor James Miller told a group of medical students in a lecture at the Edinburgh Medical Missionary Society:

Let it not be forgotten, that to obtain the end of Medical Missions, it is not in all cases essential that the Medical man should be himself the Evangelist. The professions may be distinct in representation while one in operation.⁶⁵

While the religious bodies worried about the adequacy of "theological content" in the medical missionary's work, the medical profession was more concerned over possible breach of "professional etiquette" these people might commit far from their home land. Thus future medical missionaries were warned:

We would deem it inexpedient to send a Medical Missionary to any of the great cities of the East where European or American physicians or surgeons are stationed in sufficient number to meet the demands made upon them by the natives around. . . . It would evidently be improper to send a Medical Missionary (whose services among the native population must be in general gratuitous) where a private practitioner has established himself, and must live by his profession.⁶⁶

The students were also instructed on such mundane necessities as fees:

While the pauper population shall have the full benefits of skill and medicine free, the opulent population must pay . . . [for] Christianity does not introduce a marketable commodity into the market of the world to depreciate labour and to destroy the means of honest livelihood. . . . Upon the principle of indiscriminate charitable practice we are destroying the Medical profession itself in China. . . .

⁶⁴ W. W. Keen. "On medical missionary work, with some notes on the condition of medicine in Japan," *Trans. Coll. Phys. Philadelphia*, 1879, 3rd. series, 4: 13-25. The "young American Christian physician" referred to was J. C. Berry, medical missionary to Japan, whose life was the subject of discussion at the meeting.

⁶⁵ James Miller. "Lecture 1—Introductory," in E.M.M.S. *Lectures*, p. 34.

⁶⁶ William Swan. "Lecture II—Importance of Medical Missions," *Lectures* (n. 41 above), p. 114.

Free medicine would also hinder those European doctors, who might not have the "pious design" of the medical missionaries, but were there to advance science.⁶⁷

But the most important issue that the medical profession was perpetually concerned about, was the maintenance of "high professional standards." One reason why the medical missionary was welcome was that the new breed largely replaced the former practice, whereby clerical missionaries were given perfunctory instruction in medicine before being sent off to their respective posts. For example, at St. Augustine College, Canterbury, students attended the hospital regularly during their last year of missionary training.⁶⁸ Robert Morrison, the first clerical missionary to China, himself had attended lectures at St. Bartholomew's Hospital in 1805.⁶⁹ Such an abbreviated medical course was viewed with distaste by the medical profession. Medical missionaries must be medically qualified, even though they were to practise among uncivilised aborigines. The President of the Edinburgh Medical Missionary Society was also against any lowering of standards:

There was an impression at one time, that a Missionary might have lower qualifications than another man . . . that he should attend one or two medical lectures before leaving this country. Sometimes arrangements were made for his getting a medical degree . . . [but] the proficiency required in the candidate was looked at very indulgently, because he was to be a Missionary. . . . We should reject the idea of a minister being transformed into a Medical Missionary, merely by attending a few courses of lectures.⁷⁰

Lockhart, writing from personal experience, pointed out the danger inherent in an inadequate medical training:

I believe it a great mistake to suppose that an efficient medical missionary can be made out of a minister . . . allowing him with but a slight examination to obtain a diploma, and to think himself henceforth a qualified surgeon capable of assuming any responsibility. . . . The medical and surgical knowledge thus acquired is of small practical use . . . but often leads him into dangers because from his ignorance he is induced to undertake what he is unfit for. The natives soon find out if a man knows

⁶⁷ J. Watson, "Lecture IV—On the Duties of a Medical Missionary," *Lectures*, p. 195.

⁶⁸ *Brit. & For. Med-Chir. Rev.*, 1875, 56. 322.

⁶⁹ Marshall Broomhall. *Robert Morrison, A Master Builder* (London: China Inland Mission, 1924), p. 32.

⁷⁰ William Brown. "Lecture III—On the Qualifications of a Medical Missionary," *Lectures*, p. 140.

his work; they will trust one who can help them, and speedily ascertaining how far he can be trusted. . . .⁷¹

To understand the anxiety of the medical profession over the proper qualifications of medical missionaries, one need only look at the development of the profession itself in the nineteenth century. During the same period when the medical missionary movement was in full swing, the medical profession was in the process of sorting itself out through a series of Bills (finally culminating in the Medical Act of 1858) calling for reforms in medical education and licensure. In the U.S.A. the whole of the nineteenth century could be considered a Dark Age for the profession, with quackery on the rampage. The profession was conscious of its image to the public, which did not hold it in as high esteem as it would in the next century. With the good work they were doing overseas, medical missionaries brought credit to the profession, and they must be identifiable as medical men first and foremost.

The year 1890, when the first China Medical Missionary Association conference was convened, marked the end of the first period of the medical missionary movement in China, a period of pioneers reaching into virgin territories, the ascending phase of a "Rise and Fall" in the fortunes of the medical missionary.⁷² The establishment of the C.M.M.A. itself was symbolic of a striving for professional and peer recognition of the medical missionary. Its formation was the direct result of an appeal by H. W. Boone, one of its founders:

Our united action would raise our individual status in China, it will gain us a respectful hearing among *medical men and medical societies at home*. . . . We could take our place as a band of organized workers in the cause of science and add our quota to the knowledge of the world [*italics added*].⁷³

It is significant that the medical missionaries themselves had elected to identify with the international medical and scientific community. The C.M.M.A., which was later superseded by the Chinese Medical

⁷¹ W. Lockhart, *op. cit.*, p. 117.

⁷² The "Fall" of the Western missionary began in the thirties with the gradual transfer of responsibility to native physicians and clergy, and reached its total completion in the fifties, with the creation of the People's Republic. For the development from 1890 on, see H. Balme, "The trend of medical mission policy in China," *International Review of Missions*, 1924, 13: 247; J. L. Maxwell, "Devolution in medical missionary work in China," *Int. Rev. Missions*, 1930, 19: 98; and E. H. Hume, "Christian medical work and the Chinese government," *Int. Rev. Missions*, 1938, 27: 433.

⁷³ This was a Letter to the Editor of the *Chinese Recorder*, 1886, 17: 398-400.

Association,⁷⁴ together with the hospitals and medical schools throughout the country, were the most important legacy of the "missionary invasion" of China in the last century. The medicine brought along by the Europeans and Americans has become firmly entrenched in Chinese society. The Christian Church, in comparison, has not flourished.

Conclusions

In summary, I have attempted to provide an account of how the medical missions in their development in China represented a point of conflict between the two ancient and venerable professions of medicine and religion. I have cited the experience of individual missionaries, as well as demonstrated the various camps of opinion in the two sides. We have seen at the beginning the reluctance of the Church and its missionary bodies in acknowledging the popular influence of the medical missionaries, the attempt to submerge their medical identity, and the insistence on their subordinate status to the ordained, clerical missionaries. In contrast we have seen the ready acceptance by the medical profession, which saw in these agents in foreign lands a great boost to its prestige at home. The medical missionaries, while caught in the middle, were indispensable to both. It was only through the wonders of medical treatment that the message of the Church's teachings could reach the people, and on the other hand it was only through the respectability of religious affiliation that the medical missionaries could bring credit to the medical profession.

In the nineteenth century the profession of medicine was considered beneath the other more esteemed professions such as the clergy, the bar, and the army, in social stature. But with the rise of "scientific medicine" and the effort of the medical profession to clean its own house toward the end of the century, this order became reversed. It can be speculated that the development of the medical missionary was a hint of events to come. Already the Church had sensed in the performance of the medical missionary a threat to its dominance, while the medical profession had begun to realize its enormous potential. Western religion and medicine were presented side by side to the Chinese people, and their choice seemed to have confirmed the trend.

⁷⁴ The China Medical Missionary Association in 1925 was renamed the *China* Medical Association, which was merged in 1932 with the *National* Medical Association (founded in 1915 with a Chinese membership) to form the *Chinese* Medical Association, which continues to thrive to the present day despite the tremendous changes in the political climate.

THE EFFECTS OF THE 1918 PANDEMIC OF INFLUENZA ON THE MAORI POPULATION OF NEW ZEALAND*

D. I. POOL

A study of the effects of the 1918 worldwide outbreak of influenza is rewarding in a number of ways. Firstly, many contemporary virologists and epidemiologists are still perplexed about a number of the more peculiar characteristics of this pandemic.¹ Thus, there is a need for retrospective case studies on the behavior of the pandemic in different populations in various environments, exposed to diverse standards of medical care.

Secondly, there is the inherent, academic, historical interest in the 20th century's most severe epidemic. In history this pandemic ranks alongside the great pestilences which have swept the known world from time to time, yet among laymen influenza is considered to be a very mild disease.

Thirdly, an epidemic which gives rise to high mortality at specific ages—a characteristic of this pandemic—will leave an effect on the growth and age/sex structure of a population for a considerable period after the outbreak occurs. Thus, the mortality caused by the 1918 pandemic sometimes had important long-term implications similar in effect to patterns of wartime mortality in European countries.

Finally, for the minority polynesian Maori population of New Zealand the significance of this epidemic stems from the fact that, of the many severe outbreaks of influenza and other diseases occurring between 1769 (the date of European contact) and 1918, this is the first for which there are adequate data. A study of the great pandemic may, therefore, provide some evidence about factors such as the susceptibility of Maoris to disease and their access to medical care. The analysis of the pandemic among Maoris is of further interest because there is a "control group," the majority non-Maori population, living in much the same general environment.

The 1918 Influenza Pandemic

The Maori population was probably isolated from influenza until the disease was introduced by European voyagers at the beginning of

*This paper arose from work carried out at the Australian National University, Canberra, in an unpublished Ph.D. dissertation. D. I. Pool, "The Maori Population of New Zealand," 1964.

¹ Frank Macfarlane Burnet. *Natural History of Infectious Diseases*, 2d ed. (Cambridge: at the University Press, 1953), pp. 281-290.

the 19th century. Until 1850-51 mortality from this cause appears to have been high. Then there appears to have been a gap almost without influenza epidemics, as was also true for England, until the 1890 pandemic reached New Zealand. From that time influenza remained an important cause of death, reaching a peak in 1918-19.²

The influenza pandemic of 1918-19 was the most important outbreak of disease from any cause in 20th-century New Zealand. It came in two major waves, an early mild wave in August-September, 1918, followed by an extremely severe outbreak in October-December. This is shown by the record of the number of Maori deaths from respiratory diseases during each month of the period August 1917 to December 1918 (see Table 1). The same temporal pattern is illustrated in Table 2, which gives the Maori cases handled by medical officers in the Wellington Province during the last six months of 1918.

Table 1. The Number of Registered Maori Deaths From Respiratory Diseases During Each Month from August 1917 to December 1918.

Month:	1917					1918											
	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
No. of Deaths	12	13	14	7	6	3	3	5	4	7	6	7	8	29	10	200	950

The source of Table 1, along with much of the raw data on which this study is based in Dr. Makgill's report of the epidemic.³ According to Makgill, "the mortality due to the first wave, though abnormal for New Zealand, was not alarming; but the virulence of the second wave was far in excess of anything which has hitherto been experienced with influenza."

Makgill's other comments refer mainly to the second wave, an emphasis which will be retained here, but the reports of the first wave contain two interesting points: (1) This wave was restricted mainly to the East Coast and Poverty Bay-Wairoa regions. These regions, located in the easternmost isolated extremity of New Zealand's Northern Island contain large numbers of Maoris. (2) In these regions, Maoris infected in the first wave appeared to have gained some immunity from attack during the second wave and thus, on the East Coast, the first wave was

² Pool, *op cit.*, chapter 4.

³ *Appendices to the Journals of the House of Representatives of New Zealand* (abbreviated A.J.H.R.) (1919): H-31, Appendix A. Makgill had access to unpublished records.

Table 2. Maori Cases Handled by Medical Officers, Wellington Province, July to December, 1918

Month:	July	Aug.	Sept.	Oct.	Nov.	Dec.
All forms of respiratory and catarrhal diseases:	20	49	70	90	260	33
Influenza:	15	41	63	83	250	24
Deaths from influenza (among these cases):	—	2	3	3	18	3

more fatal than the second. However, the medical officers who made these reports may have taken extra precautions when the second wave struck their district, because this situation is contrary to general evidence suggesting that an attack during the first wave may not have bestowed immunity from attack during the second.⁴

The Second Wave

The second wave of October-December 1918 first "manifested itself" in New Zealand among "native troops" (apparently Maoris and some Pacific Islanders) quartered at Narrow Neck Camp in Auckland.⁵ From there, the outbreak spread throughout New Zealand.

To calculate Maori crude death rates from influenza during this wave, Makgill obtained the number of registered Maori deaths from respiratory diseases in the last quarter of 1918. These numbered 1,160 (see Table 1). He compared these figures with those collected for the last quarter of 1917, when there were 27 deaths from this cause. Then he subtracted the 1917 figure—actually, he subtracted 30 deaths—from the total deaths arising from respiratory causes in October-December 1918. He assumed that, by this calculation, he had estimated the number of influenza deaths during the second wave alone, and that he had excluded the "normal" number of deaths from all respiratory causes.

This figure gives an epidemic crude death rate of 22.6 per 1,000 for

⁴ Burnet, *op. cit.*, p. 281. Probably the pandemic was "a manifestation of influenza virus A" (p. 287). Although Burnet's observation of immunity patterns in the great pandemic may be empirically correct in general for this one epidemic, "the bulk of the evidence (as was pointed out by the editorial reviewer of this paper) is that one attack of influenza A *does* confer some level of resistance." Thus mortality in the East Coast and Poverty Bay-Wairoa regions may have followed virus-specific rather than epidemic-specific patterns.

⁵ A.J.H.R. (1919). H-31A, pp. 26 and 28. "Report of the Influenza Commission."

the minority Maori population, as against 4.5 per 1,000 among the majority, predominantly British descent population, the non-Maoris. A rate of 20 per 1,000 is reported also for the polynesian population of Western Samoa, so the Maori rate does not appear to be an over-estimate.⁶ Males were affected more seriously than females, the male crude death rate being 27.7 per 1,000, and the female 16.3.

Makgill's data may contain two sources of error. Some influenza deaths may not have been reported, but this may be counterbalanced by the possibility that deaths from other causes are included in his influenza death rate. However, it is obvious that mortality was extremely severe during this epidemic, even allowing for unreliable sources of data.

Age-Specific Death Rates

Makgill estimated the total number of Maori influenza deaths, but did not give details such as deaths by age. Because of the high death rate it is important to extend the analysis here to the estimation of age-specific rates. This was carried out by the present writer as follows:

(1) The population at the census of October 15, 1916, was brought forward to October 15, 1918, which was approximately the end of the second week of the second wave, which lasted a total of 13 weeks. The estimated population at October 15th was distributed by age according to the 1916 distribution.

(2) Maori deaths for the main wave were distributed by age on the basis of the non-Maori age-distribution of deaths. This could be carried out with a fair degree of confidence as one relatively universal characteristic of mortality during the 1918-19 influenza pandemic was its age-incidence.⁷ From these age-distributions, age-specific rates were calculated. As will be shown, the study of the age-specific mortality during the epidemic is relevant not only to the analysis of mortality *per se*, but also to the study of fertility and the age-structure.

⁶ A.J.H.R. (1919). H-31C, p. 4. "Report of the Samoan Epidemic Commission." The New Zealand Government Statistician did not re-estimate the Maori mean population during each year 1916-20, but used the same figure for every year. It is apparent that Makgill attempted to overcome this unsatisfactory situation by using a base population of exactly 50,000. His approximation is close to the estimate made by the present writer (50,977), and thus the results are not significantly biased, i.e., the rate calculated by using the denominator I have estimated is 22.2.

⁷ Ministry of Health (U.K.) (1920). "Report on the Pandemic of Influenza, 1918-19," *Reports on Public Health and Medical Subjects*, No. 4, London. Some German States (p. 274); Rio de Janeiro (p. 340); South Africa (p. 363); Shiraz, Iran (p. 381); and London (p. 37).

The age-incidence of deaths, given in Table 3, differed considerably from that of normal influenza epidemics, such as the pandemic of the 1890s. In 1918-19, mortality was highest at ages 20-44 (males) and 25-39 (females), whereas, normally, mortality is most severe at infancy and among the very old.

An immediately obvious short-term effect resulted from the severe depletion of some cohorts. For example, the male age-group 30-39 in 1918 was reduced by about 10 per cent. However, because of poor age-reporting at subsequent censuses, and the rapidly diminishing size of the cohorts most affected, this depletion had little visible long-term effect on the age-structure.

Effects on Fertility

By contrast, the child-woman ratio at the 1921 census, given in Table 4, does show the effect of the mortality at ages 0-4 and 20-44 during this epidemic. The causes are as follows: Firstly, the number aged 0-4 at the 1921 census, the survivors of births of the period 1916-21, was abnormally small because of the high infant and early childhood mortality during the pandemic. Secondly, and perhaps more importantly, marriages would have been dissolved by the death of one

Table 3. Pandemic of Influenza; October-December, 1918: Estimated Maori Age-specific Death Rates. (per 10,000 of the Maori Population at each age-group).

<i>Age-group</i>	<i>Rates</i>	
	<i>Males</i>	<i>Females</i>
0-4	60.8	57.7
5-9	13.8	14.8
10-14	20.3	23.5
15-19	153.6	87.4
20-24	332.1	197.0
25-29	695.3	426.5
30-34	1064.5	566.4
35-39	984.4	379.6
40-44	384.3	167.9
45-49	272.2	138.0
50-54	302.1	328.1
55-59	234.4	269.2
60-64	234.4	217.5
65+	294.8	292.4

Table 4. Maori Child-Woman Ratios:¹ 1916, 1921, 1926.

Year	Ratio
1916 ²	740
1921	590
1926	768

$$1. \frac{\text{Children 0-4}}{\text{Females 15-49}} \times \frac{1,000}{1}$$

2. In 1916, there had been underenumeration in certain regions at ages 30-39, so the data from these regions have been excluded from both the numerator and the denominator of the ratio. Without this adjustment the ratio was 675.

or both spouses, and thus fertility was temporarily reduced. For example, at the high fertility age-group of 25-29, an estimate of marital dissolution can be made, based on the assumptions:

(a) that the recently recorded proportions married (from the 1956 census) and median ages at time of marriage (from registrations, 1948-51) apply to 1918. Thus 83 per cent, or 1,343, of the 1,618 females aged 25-29 in 1918 were married, and the median ages of husbands and wives differed by approximately 2.5 years;

(b) that mortality was the same for all marital status groups; and,

(c) that females 25-29 were married only to males 25-29 or 30-34. Thus, 50 per cent of the 1,343 females were married to males 30-34, and 50 per cent to males 25-29.

Four per cent of females aged 25-29 would have died as a result of influenza, while this is true for 7 per cent of the males aged 25-29, and 10 per cent of those aged 30-34. Thus, in 4 per cent of the marriages concerned the wife would have died, in 9.5 per cent the husband would have died, while in 0.34 per cent $\left(\frac{40}{1,000} \times \frac{35}{1,000}\right)$ of unions, both husband and wife would have died. In total, it is estimated that 12.15 per cent of the marriages were dissolved at this age-group.⁸

Maori Susceptibility

There is evidence that, in 1918, Maoris were more susceptible than non-Maoris to infection, and that, once infected, their cases were more

⁸ This estimate is calculated as follows:

$$\text{Proportion of marriages dissolved} = (q_{\text{male}} \times q_{\text{fem}}) + (p_{\text{m}} \times q_{\text{f}}) + (p_{\text{f}} \times q_{\text{m}})$$

where, p = probability of a spouse surviving the pandemic, and

q = probability of a spouse not surviving.

likely to prove fatal. This is suggested by data assembled from both Makgill's Report and the Report of the Influenza Commission, and presented in Table 5 below.

It might be noted that all non-Maoris and Maoris represented in the data given in Table 5 were under medical care, while it could be assumed that both groups of troops were under similar conditions of congregation.

Table 5. Incidence and Fatality Rates (%) of Selected Groups of Maoris and Non-Maoris during the 1918 Pandemic.

Population	Cases	Deaths
	Population at 'risk'	Cases
Maoris attended by medical officers in the Wellington Province:	no data	7%
"Native troops," Narrow Neck Camp: ¹	"Practically all"	10%
Non-Maoris in Military Camp: ¹	50%	4.5%

1. These troops were at the most susceptible age/sex group—males aged 20-44 years. Data relating to troops were obtained from Army Medical Officers by Makgill and the Influenza Commission.

The Maori crude death rate was, as noted above, five times that of non-Maoris. Undoubtedly, Maori mortality was higher because of lack of medical care. For example, in the Wellington Province, 24 Maoris died in October-December 1918 of the 357 who had been attended by medical officers (Table 2). However, these deaths constituted only 25% of the total registered deaths from influenza occurring in that region during the pandemic.⁹

Lack of medical care does not explain, however, the higher incidence and case-fatality rate of Maoris actually under medical supervision. Thus, the data presented in Table 5 could indicate that Maoris generally living in isolated rural areas had lower levels of acquired or inherited immunity than non-Maoris. Makgill put forward this view and gave this reason: "Presumably this susceptibility [of Maoris] is due to lack of inherited or acquired resistance to invasion by catarrhal infective organisms, a resistance which comes to the town dweller in greater or lesser degree at the cost of an endless succession of those mixed infections popularly called 'colds'." Makgill's argument

⁹ See also, A.J.H.R. (1919). E-3, p. 11, "Education of Maori Children," which reported that school-teachers often ran "sick-bays" "without medical assistance. . . ."

would not be accepted by contemporary virologists without some qualifications.¹⁰ Perhaps, therefore, the greater incidence and case-fatality rates of Maoris resulted from social factors.

It is difficult to postulate social factors which might have given rise to the greater virulence of this infection among Maoris. An obvious suggestion is their insanitary living conditions, but in England, so it was claimed, "The epidemic fell alike on the 'sanitarily just and unjust'."¹¹ However, it is probable that the close communal life of a large proportion of the Maori population may have increased the spread. On this point, no comparison can be made between the incidence and case-fatality rates of the general, and perhaps more dispersed population (Wellington Province Maoris attended by medical officers), and the military camp population, because the latter consisted entirely of persons at the most susceptible ages.

There is one other possible cause, which is suggested by a survey of the crude death rates of the years 1916-19. The crude death rate (all causes) for 1918 was 40 per 1,000. Excluding all respiratory diseases for the entire year, the 1918 rate was still 15.4 per 1,000, as against for all causes, 16.4 (1916); 15.5 (1917); and 20.3 (1919). This last figure may have included late registrations, or deaths from later minor waves of the pandemic.

Assuming that the data were equally reliable, it appears that in the year of the pandemic, mortality from causes other than respiratory diseases was almost equal to mortality from all causes (respiratory plus all others) in years in which there were no widespread epidemics. This is logical, because, for example, an attack of influenza may have precipitated the death of persons suffering from long-standing chronic disorders; some deaths may have resulted from the *sequelae* of influenza; and so on.

¹⁰ Their qualifications might be: (a) There were no specific prophylactics at that time. Some degree of temporary immunity may be bestowed by an attack of influenza. However, there are 2 or more influenza viruses; immunity is obtained only for that virus concerned in the initial attack. (b) New strains of each of the viruses can develop at any time. Some people argue that the 1918-19 pandemic was the result of a new, virulent and most peculiar strain of any one of the viruses. It cannot be decided why this strain had such epidemiologically unusual features. But, as was noted by the editorial reviewer, "previous attacks with a different strain" may have some immunologic effect and this may have been the case for non-Maoris, as Makgill suggested, even for this very peculiar epidemic. (c) The patterns of immunity to influenza are so complex that no-one can make assertions without detailed pathological, clinical and epidemiological data referring to the strain of the virus concerned in a particular outbreak. Obviously, such data were not available in 1918, for the isolation of an influenza virus was not achieved until 1933.

¹¹ Ministry of Health, *op. cit.*, pp. v, xvi, 359 & 384.

It is also possible that influenza incidence and case-fatality rates were increased because of the reverse situation: i.e. Maori morbidity rates were higher than those of non-Maoris.¹² Thus, Maoris would have had less resistance to any prevalent virus, and, once contracted, the course of the infection would have been more severe. French demographers and epidemiologists working on present high mortality populations have referred to a similar phenomenon.¹³

Conclusion

The 1918-19 pandemic was a most peculiar phenomenon with a number of characteristics which still puzzle epidemiologists, so that generalizations from this one event must be made with considerable caution. Yet, it seems from this evidence that an epidemic among Maoris could spread more virulently than among the non-Maori majority population. These data suggest that the availability of adequate medical attention during the course of the outbreak may have been a significant factor in differential case-fatality rates, but that incidence rates depended, perhaps, more on other factors. It is difficult to determine the role of these other variables. It could be argued that the non-Maoris had a greater degree of immunity to influenza acquired by more frequent exposure to infection;¹⁴ alternatively, the social conditions of the Maoris may have aided the spread of infection; or, the high levels of morbidity from all causes among Maoris may have reduced their resistance to any particular cause of death. Finally, the study of this pandemic has indicated the effect on age-structure and other demographic characteristics produced by age-selective mortality of the type likely to accompany an outbreak of an acute infectious or respiratory disorder.

¹² Maori life-expectation at this time was below 45 years at birth, whereas the non-Maori was above 62 years. Presumably, as the levels of mortality were so different, the same differentials would have occurred with respect to morbidity. Pool, *op. cit.*, chapter 4.

¹³ Pierre Cantrelle. "Mortalité au Sénégal," paper presented International African Studies Conference, Montréal, October 1969. Dr. Cantrelle refers to the difficulties in diagnosing and curing the primary cause of infection because of "la densité forte des germes."

¹⁴ Because exposure of Maoris to influenza mortality prior to 1918 had been for only two relatively brief periods, there may have been little chance for "genetic drift" such as would develop a population with immunity acquired by these means.

TEXTS AND DOCUMENTS

GALEN'S "ON THE BEST CONSTITUTION OF OUR BODY." INTRODUCTION, TRANSLATION, AND NOTES.*

ROBERT J. PENELLA
AND
THOMAS S. HALL**

Introduction: Conceptual Setting of the Treatise

Galen developed a reservoir of broad interpretive ideas which he drew upon repeatedly, arranging them in ever new patterns as treatise after treatise took form in his mind. In the following short essay, he brought many of the most pregnant of these ideas to bear on a fundamental medical question announced as the treatise begins: what is the optimal condition or organization of the body? By way of introduction, we shall give the substance of some of the explanatory notions that Galen developed and suggest how he used them not only in the present treatise but in his work as a whole. To do this should increase our understanding of Galen's reasoning about "the best constitution of the body." It may also shed light on his general analytical goals.

(1) The hierarchical structure of the body.

Aristotle had given the body a structurally (and *ipso facto* functionally) hierarchical organization. In brief, he supposed that pairs

*Abbreviations: For Galen's works in general, the letter K will be used; it refers to the C. G. Kühn edition (Leipzig: 1821-1833); this edition will be cited by volume and page. For individual Galenic works, the following abbreviations will be used: *Ars med.*, *Ars medica*; *Const. art.*, *De constitutione artis medicae ad Patrophilum*; *Elem.*, *De elementis ex Hippocrate*; *Fac. nat.*, *De facultatibus naturalibus*; *Hipp. hum.*, *Hippocratis de humoribus et Galeni in eum commentarii*; *Meth. med.*, *De methodo medendi*; *Morb. caus.*, *De morborum causis*; *Morb. vict.*, *Hippocratis de acutorum morborum victu et Galeni commentarius*; *Nat. hom.*, *Hippocratis de natura hominis et Galeni in eum commentarius*; *Opt. sect.*, *De optima secta ad Thrasybulum*; *Plac.*, *De placitis Hippocratis et Platonis*; *Prob. et prav.*, *De probis et pravis alimentorum succis*; *San. tuend.*, *De sanitate tuenda*; *Symp. dif.*, *De symptomatum differentiis*; *Temp.*, *De temperamentis*; *U.P.*, *De usu partium corporis humani*.

**We express special thanks to Marlene Sale who made freely available to us her manuscript translation of Kühn's text of our treatise but demurred, too modestly we believe, when we suggested that her name appear above, along with ours. We are also very grateful to Margaret T. May who read our introduction and translation and made numerous suggestions for their improvement. Each of us worked on both parts of this presentation, R.J.P. taking final responsibility for the translation and T.S.H. for the introduction.

of dynamic qualities constitute the four elements which compose the sublunar cosmos: hot and dry constitute fire; hot and wet, air; cold and wet, water; cold and dry, earth. At a higher level the four elements, uniformly blended in various proportions, compose the body's "like-parted" or homogeneous parts (*homoioimerē*). These parts are roughly comparable to the ones that today we think of as tissues (bone, blood, sinew, etc.). The like-parted parts exist, in turn, in non-uniform combinations composing a still higher organizational level—the level of heterogeneous parts (*anomoioimerē*) comparable to those we call organs (hand, eye, etc.).¹

Galen adopted the Aristotelian hierarchy of the body, but in some of his works he added another level to its structure by inserting, just above elements, the substances that the Greeks referred to as "humors" (*chymoi*). Galen's series thus included qualities, elements, humors, homogeneous parts, and heterogeneous or, as he often called them, organic parts. More distinctly than Aristotle, moreover, Galen emphasized the general integration or *systasis* of all the parts to compose a functional whole.²

Humors as explanatory devices were not invented by Galen. They had been posited even before Aristotle's time—most clearly in the Hippocratic treatise *Nature of Man* (ca. 400 B.C.). In that work, four humors were proposed—blood (hot and wet), phlegm (cold and wet), yellow bile (hot and dry), black bile (cold and dry). These four, variously blended, were supposed to compose the different parts of the body. The unknown author of *Nature of Man* regarded humors as physiological analogues of the four first principles of physics. He made health a proper blend (*eukrasia*) and disease an improper blend (*dyskrasia*) of humors.³

Galen's development of the humoral doctrine in his numerous works was complex and less than completely consistent. He variously depicted the humors as nutrient substances, constituents of whole blood, tissue components, behavioral determinants, and normal and pathological residues or secretions. Usually but not always he limited the number to the Hippocratic four but in so doing sometimes suggested that one or

¹ *On the parts of animals*, 646 b 12-27.

² *Elem.*, bk. 1, ch. 8 and 9 (K-1 479-481) and bk. 2, ch. 1 (K-1 492-493); also *Plac.*, bk. 8, ch. 4 (K-5 671-674); and *Nat. hom.*, Proemium (K-15 7-8); etc.

³ "Nature of Man," in *Hippocrates, with an English translation by W.H.S. Jones . . .*, Loeb Classical Library (London: W. Heinemann, and New York: G. P. Putnam, 1923-1931), vol. 4, chs. 4, 5, and 7.

more of the four had several variants.⁴ Here we would make the point that although Galen admired "Hippocrates" (i.e., the several authors of the Hippocratic corpus), he did not always follow the Hippocratic doctrine that each of the different parts is a composite of differently blended humors. Indeed, we shall see that at times—in the present treatise, for example—Galen discussed the subject of temperaments or blends without treating humors at all.

(2) Blend or temperament in sickness and health.

The association of well-being with proper temperament had complex roots in the pre-Socratic physical doctrine of opposites or contariety. An important early proponent of the idea that opposites are differently blended in different objects, including the parts of the human body, was Alcmaeon of Croton (ca. 500 B.C.) who, however, did not limit the opposites to moist-vs.-dry and hot-vs.-cold but presumably posited many other sorts of opposite conditions as well.⁵ Alcmaeon's ideas were recast in the Hippocratic treatise *Ancient Medicine* and, in an especially influential way, in *Nature of Man* where, as mentioned, they became the basis of the doctrine that the body consists of four constituent humors.⁶

Medical applications of the doctrine of opposites had a complex history in post-Aristotelian thought culminating in the use of the idea by Galen, who devoted one whole treatise of considerable length (*Peri Kraseōn*) to blending, or temperament, and invoked the subject repeatedly in other treatises as well. Blends—generally of opposed dynamic qualities (hot and cold, dry and moist) rather than of elements or humors⁷—differ (a) in different species, (b) in different individuals within each species, (c) in different tissues within each individual,⁸ and (d) in the same tissue when sick and when well.⁹ It is also the temperament of each tissue that determines its function.

Galen often wrote that health entails a due proportion (*symmetria*)

⁴ The intricacies of Galen's humoral theory are well brought out in R. E. Siegel, *Galen's System of Physiology and Medicine* (Basel and New York: Karger, 1968), pp. 196-216.

⁵ Aristotle: *Metaphysica*, 986 a 22-30.

⁶ See W. H. S. Jones, "Philosophy and medicine in ancient Greece with an edition of *On Ancient Medicine*," Suppl. to *Bull. Hist. Med.*, 1946, 8:4. Jones says that "Ancient Medicine . . . is little more than an essay in defense of Alcmaeon's theory," and that "Alcmaeon probably introduced the word *krasis*."

⁷ See e.g. *Meth. med.*, bk. 3, ch. 3 (K-10 174) and *Const. art.*, ch. 9 (K-1 254-256).

⁸ *Fac. nat.*, bk. 1, ch. 3 (K-2 7); see also note 7 above.

⁹ See e.g. *Fac. nat.*, bk. 2, ch. 8 (K-2 121) and *San. tuend.*, bk. 1, ch. 5 (K-6 15).

among the four qualities,¹⁰ but in the present work he makes it his central point to stipulate that although the proper blend of qualities (or *eukrasia*) in the like-parted or homogeneous parts is *necessary* to a well-constituted body it is *not sufficient*. Something further is needed to which we turn in section 3.

(3) Temperament (*krasis*) and arrangement (*diaplasia*).

In Galen's familiar treatise *On the Natural Faculties*, he asserts that at the beginning of life the semen confers two sets of generative capacities or faculties upon the catamenial blood out of which the fetus will be formed. One set, "alterative" faculties, are able to change the blend of the blood and so to convert it into the differently blended like-parted or homogeneous parts of the fetus. The other set, the "conformative" (moulding, or diaplasic) faculties, arrange these homogeneous or like-parted parts into heterogeneous or organic ones.¹¹ The diaplasic faculties thus assemble the organs to form a functional ensemble (*systasis*). This dual process of alteration (*alloiosis*) and conformation or arrangement (*diaplasia*) creates the organizational hierarchy already mentioned.

The foregoing general scheme led Galen directly to the central thesis of the present treatise, namely that if the constitution is to be the best possible, it must meet the two criteria of proper temperament or blending (*krasis*) and proper conformation or arrangement (*diaplasia*).¹² The medical consequence of this notion is that pathologies can be either temperamental, or diaplasic, or both (see below, section 5).

In several of his works, Galen makes much of the wisdom of the body as evidenced by the due proportionality (*symmetria*) of its temperaments and arrangements.¹³ He makes this point with special poignancy and beauty in the seventeenth and last book, or *Epode*, of his great work *On the Use of the Parts*. But the outward proof of proportionality—or disproportionality—resides, Galen says in the pres-

¹⁰ *San. tuend.*, bk. 1, chs. 4 and 5 (K-6 12 and 13); also notes 7 and 9 above.

¹¹ *Fac. nat.*, bk. 1, ch. 6 (K-2 11-15).

¹² See note 11 above and *U. P.*, bk. 1, ch. 9 (K-3 24-27).

¹³ *Fac. nat.*, bk. 1, ch. 13 (K-2 35); and especially *U. P.*, bk. 4, ch. 7 (K-3 278-281), bk. 6, ch. 12 (K-3 464-465), and bk. 11, ch. 8 (K-3 868-870); etc.

ent work, in the overt activities (*energeiai*) to which the blendings and arrangements give rise.¹⁴ We need next, therefore, to examine Galen's theory of the nature of function or action.

(4) Galen on *energeia* or action.

Galen developed in various works a thoughtful analysis of the physical basis of the normal operations of the body. In imitation of Aristotle he regarded all activity as motion, most motions being either qualitative or translatable.¹⁵ What a heterogeneous part or organ can do (how it can move) depends, according to Galen, upon what the homogeneous parts can do that compose it. And what these homogeneous parts can do depends on the blend of dynamic qualities they contain. No one knows exactly what blend permits a particular action and so, to cover our ignorance, we say that parts, or ensembles of parts, possess "faculties" for doing what they do. The stomach has a peptic or concoctive faculty; the veins a blood-making or hemopoietic faculty; the heart a pulsific faculty; and so on.¹⁶ There are, also, faculties common to all the parts—attractive, adhesive (or retentive), alterative (or assimilative), and expulsive faculties permitting the replacement of materials continually lost in the flux of the body.¹⁷

In analyzing action or function, Galen insists that we distinguish the *faculty* of an organ (e.g., the hemopoietic faculty of the liver) from its *action* (bloodmaking or hemopoiesis) and both of these from the action's *effect* (blood).¹⁸ Galen also asks us to distinguish the actions of the organs (their *energeiai*) from their uses (*chreiai*), meaning by "use" the indispensable contribution of each organ's activity to the activities of other organs and thus of the body as a whole.¹⁹

In the light of the analytical scheme just outlined, it is understandable that Galen should approach the subject of the present treatise from a functional point of view, so that when he says that the best

¹⁴ Similar ideas are eloquently developed in *U.P.*, bk. 1, ch. 9 (see note 12 above) and often elsewhere.

¹⁵ *Fac. nat.*, bk. 1, ch. 2 (K-2 2-3).

¹⁶ *Ibid.*, bk. 1, ch. 4 (K-2 9).

¹⁷ See *Temp.*, bk. 3, ch. 1 (K-1 654) and, for a variant handling of the same idea, *Fac. nat.*, bk. 1, ch. 11 (K-2 24-26).

¹⁸ *Fac. nat.*, bk. 1, ch. 2 (K-2 7). See also A. J. Brock, *Galen on the Natural Faculties* (Cambridge: Harvard Univ. Press and London: W. Heinemann, 1952), pp. xxix-xxx.

¹⁹ See e.g. *U.P.*, bk. 1, ch. 8 (K-3 16-21) and elsewhere in the same treatise. For discussion, M. T. May, *Galen on the Usefulness of the Parts of the Body . . .* (Ithaca: Cornell Univ. Press, 1968), vol. 1, pp. 9-10.

constitution entails a *symmetria* of temperaments and arrangements he means that only symmetrical—or proportionate—temperaments and arrangements can assure the optimal performance by the body of its appropriate *energeiai* or actions.²⁰

Such conditions can only exist, he adds, in bodies free from disease. Thus the best constitution will be the temperament and arrangement that protect against disease. But disease begins when functions "according to nature" (*kata physin*) are replaced by functions "contrary to nature" (*para physin*).²¹ Hence to define "best constitution" requires that we know what causes disease, disease being defined as dysfunction.

(5) Galen on the causes of diseases.

On perhaps no subject was Galen more prolific than on the causes of diseases. He proposed not one but many etiological schemes, indicating here—as occasionally elsewhere—that causes may be either internal or external.²² Diseases may be classified as (a) homogeneous disruptions, which disturb the blend or temperament or (b) heterogeneous disruptions, which produce defects in the conformation, number, size, or position of the organic parts.

Galen often refers to such temperamental and diaplasic disruptions as "loosenings" (*lyseis*) or "solutions of continuity." He makes such dissolution or discontinuity the cardinal factor in disease.²³ Discontinuities may occur in any part but are differently designated according to the particular part affected (avulsion in ligaments, rupture in blood vessels, contusion in muscles, etc.).²⁴ Galen also makes solution of continuity the physical basis of pain.²⁵ *Lysis* (Lat. *solutio*) does not mean the same thing that solution means in modern chemistry. Indeed Galen sometimes ascribed the continuity of the tissues to the presence in them of a certain resident moisture, and dissolution was as likely to

²⁰ *Fac. nat.*, bk. 2, ch. 8 (K-2 118); *Symp. Dif.*, ch. 1 (K-7 47); and *U.P.*, bk. 1, ch. 9 (K-3 24-25).

²¹ E.g., *Symp. dif.*, ch. 1 (see note 20 above); *Metb. med.*, bk. 1, ch. 7 (K-10 54-55); *San. tuend.*, bk. 1, ch. 5 (K-6 21-22); and *Const. art.*, note 7 above.

²² *Hipp. hum.*, comment. 3, article 3 (K-16 357); *Nat. hom.*, comment. 2, sect. 5 (K-15 125-126); *Morb. caus.*, ch. 1 ff. and ch. 7 ff. (K-7 1, 26).

²³ *Morb. caus.*, ch. 11 (K-7 37-38).

²⁴ *Metb. med.*, bk. 3, ch. 1 (K-10 160) and bk. 4, ch. 1 (K-10 232).

²⁵ *Ars. med.*, ch. 20 (K-1 357).

occur from drying as from wetting; thus senility and senile diseases were regarded by him as desiccative in origin.²⁶

What condition or constitution, then, will guard best against externally and internally occasioned dissolutions or discontinuities and hence against the possibility of actions (or functions) contrary to nature? One of several answers Galen offers to this question—and the one he especially emphasizes in our treatise—is that the condition in question will occupy a position of intermediacy between opposing deviations or extremes.²⁷ The desired intermediacy can be a matter either of temperament (*krasis*) or arrangement (*diaplasia*). For example, a homogeneous part can deviate in eight ways from the intermediate temperament required for its proper function. It can become too warm, too cold, too moist, or too dry; too warm and moist, too warm and dry, too cold and moist, or too cold and dry.²⁸ Any initial or constitutional imbalance in these directions facilitates further deviation under the provocation of external or internal causes.

Intermediacy is a matter not only of temperament but of arrangement as well. Galen says, for example, that the best constitution will be intermediate between a rare *diathesis* and a dense one. The essence of his argument is that for any part there may be several different desiderata that are best attained by different conditions or arrangements. No one *diathesis* can satisfy all. A compromise solution is needed and this will take the form of a condition intermediate among the several ideals. Let us see how Galen applies this principle in the case of the dense and the rare.

(6) The dense and the rare.

Ideas about rarity and density, and about rarefaction and condensation, go back at least to Anaximenes (6th c. B.C.) who seems to have maintained that all bodies in the cosmos are composed of a single principle, namely air, rarefied or condensed ("felted") in varying degrees.²⁹ The distinction rare vs. dense fitted easily, also, into the theories of atomists, both pre- and post-Aristotelian, who interpreted it in terms of the ratio of matter to empty space in different objects equal

²⁶ See for a discussion of this subject, T. S. Hall, "Life, death, and the radical moisture . . .," *Cho Medica*, 1971, 6: 1-20.

²⁷ *Ars med.*, ch. 14 (K-1 342-343) and ch. 24 (K-1 370-372); also Galen's treatise *De inaequali intemperie* (K-7 733-752).

²⁸ *Temp.*, bk. 1, ch. 8 (K-1 559).

²⁹ H. Diels, *Die Fragmente der Vorsokratiker* (Berlin: Weidmann, 1922) vol. 1, pp. 22-24 (fragments A5 and A7); and Aristotle, *Metaphysica*, 984 a 6-11.

in size (such as a ball of wool and a ball of lead).³⁰ The atomists—and Aristotle—concerned themselves especially with evaporation and condensation. Aristotle used the term “cycling” or “circulation” (*kyklos*) in reference to the repeated evaporation of natural waters and their recondensation as rain.³¹ Galen reflects the influence of all of these theorists but here especially, perhaps, of Methodist thinkers nearer him in time, who based a whole medical system on the pores or passages of the body and their relative degrees of openness and closedness. In developing his argument, he takes his departure from a remark in the Hippocratic treatise *On Nutriment* to the effect that for persons tending to lose matter rapidly by transpiration it is better for the body to be rare; for those losing matter slowly, to be dense (see below, note 43).

In Galen's book *On Health* we hear that the terms dense and rare are not properly used with respect to the homogeneous or like-parted parts any more than the earlier physicists properly used these terms when they spoke of a single first principle (e.g., Anaximenes' air).³² Density and rarity imply the presence of pores which are open and filled with moisture in the rare condition and not so in the dense. In other works, we hear that the rare condition is healthy in children, the dense condition in age.³³ Again, that natural rarity disposes to fatigue and even to syncope, whereas natural density disposes to disease of long duration.³⁴ Again, that the naturally rare diathesis requires a moister, and the naturally dense diathesis a drier, diet.³⁵

In the present treatise, we shall hear Galen assert that although the rare diathesis protects the body against the harmful effects of nutritive residues,³⁶ further criteria must also be considered. A rare diathesis disposes to diseases caused externally, and a dense one to those caused

³⁰ Lucretius, *De rerum natura*, bk. 1, lines 358 ff.

³¹ *Meteorologica*, 346- b 37 to 347 b 8. Scholars have sometimes missed the influence of this point on William Harvey who in 1628 was to say that just as the term circulation or cycling had been used by Aristotle in connection with the evaporation and condensation that generate rain, so too the term could be used to describe the alternate rarefaction of the blood (in the heart) and its condensation (in the lungs and other tissues). *Exercitatio anatomica de motu cordis* . . . , ch. 9, see e.g. K. J. Franklin's edition (Springfield: Thomas, 1958), pp. 58 (Engl.) and 165 (Lat.).

³² *San. tuend.*, bk. 2, ch. 5 (K-6 119-121).

³³ *Opt. sect.*, ch. 26 (K-1 179).

³⁴ *Morb. vict.*, comment. 2, article 47 (K-15 610).

³⁵ *Prob. et prav. succ.*, ch. 10 (K-6 798).

³⁶ For a *precis* by Galen himself of his theory of residues see *U.P.*, bk. 9, ch. 1 (K-3 684-687) especially in M. T. May's felicitous translation, *Galen on the Usefulness of the Parts* . . . , note 19 above, vol. 1, p. 424-425.

internally. Hence with respect to these opposites intermediacy is best. It is also best with respect to size and other diastolic variables as well.

Summary

An optimally constituted body displays, according to Galen, a proper proportionality and intermediacy with respect to both the temperament and the arrangement of its parts. This is true because only under such conditions will the body be resistant to those externally and internally caused dissolutions which, if permitted, would disturb normal function. In the above paragraphs, we have shown that Galen reaches these conclusions by applying to the problem of the best constitution certain broad explanatory ideas that govern his interpretive endeavour as a whole.

Translation³⁷

- 737K 1. What is the best constitution of our body? Is a perfectly tempered constitution the best, as was the opinion of many ancient physicians and philosophers? Or is it rather the case that, even though the best constitution is necessarily perfectly tempered, a [merely] perfectly tempered constitution is not necessarily the best? For a balanced mixture of hot, cold, dry, and wet is what constitutes the health of our body's
- 738K homogeneous parts (*homoioimerē*). But the formation of a living creature out of all these homogeneous parts depends on the arrangement, size, shape, and number of the body's composites;³⁸ and it would seem possible that, even though a body is composed of parts all or almost all of which are well-tempered, there could still be something wrong with the size of these or with their number, configuration, or arrangement in relation to one another.

We must attempt, then, to treat all these matters in order, beginning with the terms that we need to use in this discussion; for there is disagreement even about them. Some think it proper to refer to the best "constitution" (*kataskēuē*) of the body, whereas others prefer the term

³⁷ Greek text and Latin translation appear in the fourth volume of C. G. Kühn, *Claudii Galeni Opera Omnia* . . . (Leipzig, 1821-1833), pp. 737-749. The only critical edition is that of Georg Helmreich (Hof, 1901). This edition includes in addition to our treatise Galen's *De bono habitu* along with notes, mostly textual and grammatical, on both treatises. Based on five manuscripts, Helmreich's text is an improvement on Kühn's and has been used as a basis for the present translation. We have indicated Kühn's pagination marginally and have divided the whole treatise into paragraphs for the convenience of the reader.

³⁸ By "composites" (*syntheta*) Galen means heterogeneous parts (corresponding to modern organs).

739K "disposition" (*diathesis*) or "state" (*hexis*) or "habit" (*schesis*) or "nature" (*physis*), or whatever term a person may think best. I find no fault with anyone's explaining a term as he pleases, but I would disapprove of his reproaching those who use it differently than he does; for I think that the fullest and greatest measure of attention should be given to the issues that constitute the subject-matter of a discussion rather than to its terms. Whether a person wishes to use the term best "constitution" of the body or "disposition" or "state" or "habit" or "nature" or some other term—if, after deciding on the term, he begins with the commonly accepted notion of it and, as he proceeds to investigate its essence, carries out his research in an orderly and methodical manner, then I shall commend him far more than I would a person who gives the impression of being a master of terminology.³⁹ So let us proceed in a similar fashion, beginning with the generally accepted notion, and after defining it, we may advance methodically to the next step of our enquiry.

2. What, then, is the generally accepted notion of the best constitution of the body? One can hear men differ with one another verbally about this matter, even though all in fact are thinking one and the same thing. For example, all men praise the "healthiest" (*hygieinotaton*) body, just as they praise the "soundest" (*euektikōtaton*) body. In both cases they are focusing on the same thing and are directing their thoughts to it, though they have no clear conception of it nor can they explain it distinctly. For they think that the functions of all the body's parts must be strong and not easily overcome by the causes of disease. "Health" (*hygieia*) is to be found when the functions of the parts are in accordance with nature; "soundness" (*euexia*), when these functions have a certain robustness. But 740K the condition common to both states is that the body is not easily overcome by diseases; so naturally the healthiest (*hygieinotatē*) condition—which all men long for—is a sound one (*euektikē*). It is also characterized by the proper working of the body's functions and a resistance to dissolution. This condition is quite rightly called "soundness" (*euexia*); the term "hexis" itself already denotes stability and resistance to

³⁹ The five terms mentioned here all refer generally to some "state" or "condition" but in actual use they had acquired, by Galen's time, certain nuances and technical meanings. *Physis* had a number of senses among the philosophers—the growth process, the *Urstoff* of things, their essence or ontological reality. Medical writers sometimes used the term in the sense of "natural disposition" or temperament, and sometimes, following Hippocrates, in the sense of the teleological agency that determines the organization and actions of the body. *Hexis* implied a permanent condition, while *schesis* connoted an alterable one (*Meth. med.*, bk. 8, ch. 1, K-10 533). *Diathesis*, like *schesis*, represented an alterable state (Aristotle, *Categoriae* 8 b 27) and was virtually interchangeable, in Galen's usage, with *kataskēuē* (*Symp. dif.*, ch. 2, K-7 43). In any case, terminology was a secondary affair for Galen. In *Symp. dif.* (K-7 45) in a passage parallel to the present one, Galen censures those "who spend their lives disputing terms and never reach the goal of their profession." For Galen elsewhere on those who quibble over names, see May (note 19 above), pp. 217-218, 228-229, 308, 369, and 515.

dissolution, but the term "euexia" denotes these qualities even better, since an ideal "hexis" is predicated by it.⁴⁰ Thus, whether we refer to the best constitution of the body as "healthiest" or "soundest," we shall not be incorrect; and our criterion of this condition will be whether the body's functions are working properly and [so] resist dissolution.

Now that this definition has been laid down, we must consider next what is the essence of such a state (*hexis*) of the body. Here, again, we may begin our enquiry by asking what the disposition of our body is when we are functioning best. To do this we must call to mind some principles already set forth in other treatises. The first point is that our bodies are composed of a mixture of hot, cold, dry, and wet; these matters have been elucidated in the book entitled *On the Elements according to Hippocrates*. Secondly, we must recall how the temperaments of the parts are defined; these matters have been discussed in the treatise entitled *On Temperaments*. Next, recall that each of the organic members of the body has one part in it that is the cause of its function, and that all the other parts making up the complete organ were produced for the sake of this one; these matters have been elucidated well enough in the work entitled *On the Use of the Parts*.⁴¹ The best constitution of the body, then, will be that in which all the homogeneous parts—that, of course, is the name given to the parts that are uniform to our perception—have their own proper temperament, and in which the composition of each of the organic parts out of the homogeneous parts has been achieved with perfect proportion in respect to their size, number, configuration, and arrangement in relation to one another.

It should not be hard to recognize that the body whose functions are all in perfect condition is also the least susceptible of all to disease. And any part that functions at its best is a product of the good temperament of the homogeneous parts and the well-balanced constitution of the organic parts—precisely the description of the body mentioned above. Thus, it is clear that such a body will function best of all. That it is also least susceptible to disease you can clearly understand in the following way.

3. Of the things that harm our bodies, some come from external causes, while others arise from the residues (*perittōmata*) of food. Those that come from external causes affect bodies that have been heated and cooled or moistened and dried excessively; in this category should be placed fatigue, insomnia, distress, anxiety, and other such conditions. Those that come from residues of food are of two kinds (for the residues themselves are of two kinds, some troubling the body by their quantity, others by their quality), but they take many forms. Now that the well-balanced

⁴⁰ The word *hexis* and *-exia* as in *euexia* are both derived from the same verb *echo* (have, hold), whereas *eu-* is a common compounding element signifying "good" or "ideal."

⁴¹ See May (note 19 above) pp. 80-81.

743K body is not subject to external causes is clear from the very fact of its good temperament; for it is not easily or readily that a good temperament lapses into a state of disproportion, since a good temperament is so thoroughly and completely removed from extremes. Furthermore, by virtue of functioning well such a body would be best equipped to resist disease, since it would be minimally subject to fatigue. Of course, it is also characteristic of such a body to have the healthiest humors of all, so that it will hold out against distress, rage, insomnia, and anxiety, as well as against heavy rains, droughts, plagues, and—in a word—all causes of disease more easily than other bodies do. Bodies with bad humors are very easily overpowered by such causes, for such bodies already come close to diseased states in and of themselves. Thus, the said disposition is not subject to the external causes of harm that attack us and vex our body.

744K Neither is such a disposition subject to diseases caused by residues of food; this you can clearly understand if you consider that in a disposition of this nature neither an abundance of residues nor unhealthy humors easily accumulate; and even if such an accumulation occurs, it cannot injure the living being at all. For the mutual balance of the physical functions and the individual excellence of each function both prevent the residues from forming and easily excrete those that have formed; and if the residues should ever linger for a long time, the body is not overpowered by them in the least. It is characteristic of weak and poorly tempered dispositions to be overcome easily by the causes of disease, whereas long resistance characterizes well-tempered and strong dispositions—which was our description of the ideal natural disposition. You have the evidence that the best disposition is well-tempered in the treatise *On Temperaments*. The evidence that the best disposition is well-balanced in regard to its organic parts may be found in the seventeenth book of the treatise *On the Use of the Parts*. And now you may be reminded of these points equally well from what I am about to say [in section 4 below].

745K We have shown in our discussions about it that health is not something narrow or absolutely simple or indivisible, but rather is capable of wide variation. Since this is so, I think that if this discussion is to be useful to those who practice the art of medicine, it would be a good idea not merely to describe the rarely encountered body presented in medical theory—an analogue, as it were, of the *Canon* of Polyclitus⁴²—but also to mention examples which in some respect fall short of the theoretical description—not, however, cases whose defect is already obvious and serious. In this way we shall be quite capable of recognizing quickly the best constitution

⁴² The name of Polyclitus (5th c. B.C.) is associated with the high development of the abstract and idealized human figure in Greek sculpture. In a book called the *Canon* he discussed anatomical proportions; he embodied his anatomical ideal in his statue (probably the Doryphoros) also referred to as the Canon. See Galen, *Temp.*, bk. 1, ch. 9 (K-1 566) and *Plac.*, bk. 5, ch. 3 (K-5 449).

of the body, even if its actual occurrence is infrequent, and of easily distinguishing from it all the other constitutions which we encounter in our daily work. For absolutely perfect functioning in every respect, so that none of the homogeneous parts and none of the organic parts is unbalanced, is not something that tends to occur very often, though instances may occur over longer stretches of time. What you will usually observe are cases that fall somewhat short of this norm.

4. The exactly well-tempered body is midway between being soft and being hard, between being very hairy and being hairless, between having wide veins and having narrow ones, and between having a strong pulse and having a weak one. The body that is exactly balanced in regard to its organic parts is, to put it briefly, just what the *Canon* of Polyclitus was said to be. Now bodies that are hotter than they should be—but only slightly so—or somewhat colder or too dry or too wet, or those that have a single part malformed, may all seem on occasion to be superior to a properly balanced body. For example, a body that is harder than it should be is less susceptible to all external causes of disease, whereas a body that is softer than it should be is less susceptible to internal ones. So, too, a body that is too dense is less susceptible to external causes, whereas a body that is too rare is less susceptible to internal ones.

Now Hippocrates' statement in the tract *On Nourishment*—that "Corporeal rarity is a healthier condition for transpiration in those from whom more is taken away, but is unhealthier in those from whom less is taken away"—was made in reference to the residues of food, which contribute to health and to disease.⁴³ For it was not his intention in that book to discuss absolutely healthy or absolutely sick bodies. Instead, he discussed all bodies that are in good or in poor condition as a result of their nourishment, and he reasonably included mention of bodies that are healthy or sick in respect to the residues of food in them. In respect to these residues, the rarer body is healthier and the denser body is more sickly. On the other hand, the rarer body is more easily overpowered by all external causes of disease, whereas the denser is less susceptible to them. Thus, we can say that the well-balanced body, in addition to its other advantages, will be neither rare nor dense. It will be midway between these

⁴³ This is one of several versions by Galen of the twenty-eighth maxim in the Hippocratic *De alimento*. "Corporeal rarity is a healthy condition for transpiration in those from whom more is taken away; it is an unhealthy condition for transpiration in those from whom less is taken away. Those who transpire well are weaker and healthier and recover easily; while those who transpire badly are stronger before becoming ill, but once ill, do not recover easily. This applies to the whole and the part." See also *San. tuend.*, bk. 1, ch. 10 (K-6 53) and *Hipp. alim.*, comment. 4, article 2 (K-15 376-380). Both the cited passages again insist on the need for a balance between rarity and density. If a body is too dense and transpiration is difficult, plethoric diseases may result; excessive rarity, on the other hand, will cause the body to succumb to every external attack that comes along.

extremes, just as it is in other respects; it has the advantage in some way over each of the two excesses. For the denser body is less subject to external causes of disease, and the rarer is less subject to internal ones. And though you could not find a body that is strictly resistant to both causes, you might say that the body that is midway between all extremes is resistant to both in a relative sense—and we assert that such a body is the healthiest of all. So, too, a disproportionately dry body is more resistant to all moistening causes of disease, whereas a disproportionately wet body is more resistant to all drying causes. Thus, as was said above, the mean is not the most completely resistant of all conditions; but though it may be inferior to every condition in some particular way, still it is the most desirable of all.

In the treatise *On Temperaments* it was stated that such a body must be neither large nor small, but rather of medium size, and now I reiterate this point.⁴⁴ A large body is such because it has a large amount of matter, and
748K a small body is such because it has a small amount; just as a statue is large by virtue of a significant quantity of bronze or small by virtue of a lesser quantity, though neither condition prevents it from having well-proportioned parts. A body that is neither noticeably dense nor rare, neither hard nor soft, neither very hairy nor hairless, is perfectly tempered regardless of its size. And if such a body also maintains due proportionality among its organic parts, then it would be beautiful to behold and at the peak of proper functioning in its constitution.

A body is larger or smaller than it should be for one of two [possible] reasons: larger, because of an excess either of its moisture (*hygrotes*) or of its matter (*hyle*); smaller, because of a predominance of dryness or a deficiency of matter.⁴⁵ Growth continues until the bones have been hardened; but if there is a deficiency of matter or [a predominance of] dryness, this hardening will take place with little increase in size. Thus, since there are two [possible] reasons that a given body stops growing

⁴⁴ Galen has just been explaining that deviations from the mean may sometimes be advantageous. Contrary deviations from a given mean may yield different advantages, however, so that—everything considered—the mean condition is generally the best. Galen will now extend this principle to size. But he makes the added point that deviations in size—in whichever direction—are in some cases acceptable and in other cases not. In the present paragraph he speaks of deviations that are compatible with good constitution; in the succeeding paragraph, of deviations that are incompatible with it (ones in which the “body is larger or smaller than it should be”).

Only limited light is thrown on these subjects by Galen's famous treatise *On Temperaments* to which he here refers us. Primarily concerned with the hot, the cold, the wet, and the dry, that work does discuss such subjects as adiposity and muscularity (*Temp.*, bk. 2, ch. 4 [K-1 606-611]) and the need for dimensional proportionality among the parts (bk. 2, ch. 6 [K-1 622-623]), but it contains no systematic discussion of size in general.

⁴⁵ To distinguish *hygrotes* (moisture) from *hyle* (matter) is not typical of Galen who elsewhere makes moisture a *kind* of matter. For Galen on moisture see Hall (above, note 26).

749K sooner or later, large size does not absolutely indicate moisture, nor small size dryness. But if a large body is also soft and a small body also hard, in such a case the former will be moist and the latter will be dry. However, if these qualities are inseparable [i.e., if large bodies are invariably soft and small bodies invariably hard], then it is superfluous to take note of a body's large or small size. For the signs peculiar to the temperaments will prove adequate, and they have been fully discussed in the treatise *On Temperaments*.

If these views are correct, then the best constitution of the body must be reckoned to depend on two things, the good temperament of the homogeneous parts and the proper balance of the organic parts.

THE BERLIN CORRESPONDENCE IN THE JAMA DURING THE HITLER REGIME

HARRY BLOCH

A section of "Foreign Letters" from correspondents of world capitals was formerly published in the JAMA. The Berlin Letters of the Hitler period are of historical importance for the truth they reveal and as a warning to medicine and science before the passage of time makes them unbelievable. Corrupted by Nazi racism, doctors became a compliant instrument in Hitler's plans against humanity. Medicine almost destroyed itself as it recklessly rushed to serve conscienceless projects in the guise of science. Medical quacks and charlatans flourished, and regular physicians eagerly entered their ranks for economic advantage. But most lamentable was the evidence that respected and eminent doctors countenanced the debasement of their profession, burning of books, dismissal of colleagues from hospital and university posts, and defilement of medical ethics.

The facts exposed in these letters are systematically assembled and publication data are in brackets. No attempt is made to analyze the factors that brought about the precipitous descent of German medicine; nor why a celebrated surgeon, Dr. Ferdinand Sauerbruch, an eminent medical historian, Dr. Karl Sudhoff, and numerous renowned physicians capitulated to Nazi doctrine; nor why thousands of demoralized German doctors by their silence approved, and thus became accomplices. The letters speak for themselves.

Concerning Reorganization of German Medicine

Hitler receives (5-27-33) leaders of medicine at an official reception. The head of medical syndicates declares: "It is not the array of . . . equipment nor . . . medicine that affect the cure but rather the living human forces . . . emitted by the personality of the physician." Under the new state, the Fuhrer of medicine will organize and guide the profession whose main duties will lie in the field of public health and race hygiene. Those pursuing the healing art (6-9-34) must adhere to reorganization plans and accept nature medicine. A new type of physician, and a new profession (2-15-36) are the task of National-Socialism. Race and not healing is important.

Public Health Department dissolved (11-11-33); and Dr. Wagner is appointed Director of Council of Health, including, hereditary biology, race hygiene, nature cure, and therapeutic cults. President of the Federal Board of Health (4-6-35)

states that duty of physicians is not public health, but to train German people to feel, think, and do in a manner creditable to the German race.

Dr. Wagner (1-15-38) rules that physicians shall preserve racial purity, encourage procreation, employ nature cure methods, and reveal patients' secrets in the interests of public welfare.

Concerning Racism

Professor Fritz Lenz (8-26-33) calls for race hygiene as main study for medical students. Professor Lenz appointed to first chair of race hygiene (1-20-34) at the University of Berlin. He declares proletariat is gaining possession of intellectual professions (6-8-35) which lowers racial quality.

Hygienists directed to abandon (4-7-34) social for racial hygiene. Racial matters (9-22-34) included in public health services. Purity of German race (6-1-35) preserved by health services. Chair of Public Health at University of Munich (2-2-35) engaged in racial supervision. Munich Bureau of Health sets up a card index (7-22-39) of racial characteristics of population.

Federal Council of Eugenics created (7-22-33) to protect Germans from inferior humans and race mingling. To prevent propagation of inferior types (8-12-33), marriage counselling centers established. Documentary evidence (9-16-33) of freedom from non-Aryan ancestors for four generations necessary. Marriage and extra-marital relations (12-14-35) of German and Jew forbidden. Eugenics Court recognizes (7-20-35) "racial emergency" as indication for abortion. At Medical Society of Hamburg, Dr. Bertram advises application of eugenic measures to diabetics and to ban marriage of sufferers.

Professor Rudin, Munich psychiatrist, declares (7-22-33) race hygiene requires eradication of pathologic elements. Professor Muchermann states (8-5-33) that the medical profession concurs with German government to exclude from propagation those who bear degenerate progeny. Elimination of weak (11-3-34) is nature's weeding out process and accounts for male fetal mortality.

The fundamental concept of the Nazi party (9-9-33), to improve German race and eliminate offspring of those with hereditary disease by sterilization, becomes effective law January 1, 1934. Eugenics court (2-24-34) subjects to the law those with congenital weakmindedness, schizophrenia, manic-depressive insanity, epilepsy, chorea-minor, hereditary blindness, deafness, alcoholism, and bodily deformities. At symposium (2-2-35), "Prevention of Useless Lives," participants conclude that natural elimination and not natural selection prevents inferior types. Government will not tolerate (9-28-35) opposition to sterilization law. Sterilization, whipping, and pillory (10-18-33) supported by Prussian Medical Officers Association to combat crime. Congress of Gynecologists (1-6-34) approves law. Its application (7-7-34) to asocial persons, such as beggars, vagrants, prostitutes, and criminals advised. Ophthalmologists recommend (9-8-34) sterilization in hereditary blindness. Psychiatrists (10-13-34) approve law. Congress of German Ophthalmologists (12-29-34) proposes sterilization of females with gliomas; the Hamburg

Medical Society (1-25-36) for club-foot; it is advised (1-24-36) in familial tuberculosis, justified (4-2-38) in muscular atrophy, and advocated (12-16-39) for inferior racial stock. At the International Hospital Conference in Rome (5-2-36) there is strong opposition to German stand on eugenics and sterilization; the Pope condemns it as paganism; and the German demand for inclusion of sterilization on the agenda of the next meeting is rejected.

Tuberculosis Commission (9-2-33) dismisses non-Aryans. Jews, and Aryans (1-27-34) (8-18-34) married to non-Aryans dropped from panel practice. Berlin Academy for Graduate Work restricted to Aryans. New legislation stipulates (2-15-36) elimination from medicine of non-Aryan doctors, Aryans married to Jews, and those with ancestral Jewish blood. Physicians classified (4-25-36) as Jewish or non-Jewish, and association and communication forbidden. Dr. Wagner (5-30-36) forbids referrals or locum tenens between the two groups; excludes Jews from practice in government, municipal, or private institutions; and eliminates Jewish professors from university posts. Licenses of Jewish doctors (9-17-38), who comprise thirteen per cent of German doctors (3-9-35), voided; their practice restricted to Jewish population concentrations; and are forbidden to attend Germans or practice nature medicine. Severe shortage of doctors (1-22-38) noted. Jewish physicians (10-29-38) identified not as doctors but "healers of the sick," their offices marked by special legends, and landlords privileged to evict them. Jewish patients restricted to Jewish hospitals, treated (5-13-39) by physicians "Eligible to treat only Jews," and attended by Jewish nurses (12-10-38) trained in Jewish hospitals. Jews forbidden (8-22-36) to operate a pharmacy; and Dental Journal (2-11-39) calls for purge of Jewish dentists.

Concerning Nature Medicine

Third Reich recognizes (12-23-33) Nature Cure Association. First Congress of Lay Practitioners informed (9-8-34) that the government will license Aryan "Heilpraktikers" not married to non-Aryans; recognize nature cure methods; and create chair of nature cure medicine. Meeting of lay practitioners (12-21-35) assured of government support to achieve rank and prestige of regular physicians. The Organization of Lay Practitioners (4-17-37), who in any other country would be regarded as charlatans, recognized by government. Dr. Wagner (1-8-38) declares "Heilpraktiker" has rights similar to those of physicians.

Prof Zeiss recommends that physicians study astrology (4-7-34) because it influences epidemics. Leeches, nasal reflex therapy, and homeopathy (12-21-35) extolled by lay practitioners. Dr. Wagner and D. Kalschau, professor of nature cure practice at University of Jena, propose to discard (9-7-35) rational scientific therapy for hydrotherapy, herbal therapy, and homeopathy. At opening of Center for Führer Training in Medicine (9-21-35), Dr. Wagner asserts it will open minds of future Führers to blessings of nature cure. Regular physicians forbidden (2-15-36) to turn to nature practice to make larger profits. Director of lay practitioners (1-8-38) declares "Procedures of nature are rooted in the soul and emotions."

Nature medicine literature advocates (6-13-36) multiple instant punctures; artificially induced suppuration; vegetable preparations; and poultices, fasting, purging, and clysters for the treatment of appendicitis. A Dresden hospital treats venereal disease (1-13-36) with nature methods.

Organization of New German Medicine (2-8-36) (4-11-36) includes nature cure and regular physicians, homeopaths, kneippists, balneologists, and psychotherapists; and has as its slogan, "Back to Nature." Specialization is condemned, nature cure praised as medicine of future, and homeopathy and herbal medicine extolled. Society of Hygiene (12-19-36) acknowledges that problems of hygiene are solved through New German Medicine. Society of Homeopathy (12-2-39) claims its methods vindicated by National Socialism.

Legal decision absolves nature cure doctor (1-8-38) who used mud packs for treatment of a breast tumor, since there is no evidence that the treatment was responsible for fatal outcome. A physician, who practices nature medicine (3-12-38), applied poultices in a child with diphtheria and was acquitted because nature cure methods are rational. Homeopath pardoned in fatal diphtheria (3-12-38), since there is no evidence that homeopathic therapy is ineffectual in diphtheria. Practitioner of telephonic transmission of vital magnetism exonerated (3-12-38) in a case of diphtheria.

Concerning Internal Medicine

Professor Lichtwitz, dismissed as president of the Congress of Internal Medicine, is replaced by Nazi appointed Professor Schittenheim (6-10-33) who outlined congress role: eliminate foreign elements; special consideration to problems of race; and promote German culture to maintain intellectual leadership.

Chairman, Congress of Internal Medicine (7-14-34), declares investigations must harmonize with Nazi state, be concerned with race problems, and aid political leaders.

Congress of Internal Medicine (6-22-35) informed that German medicine rests on National Socialism, and a bridge exists between medical and nature cure methods.

Austrian Gesellschaft der Aertze dissolved (5-13-39); reorganized for Aryans; and under political not scientific auspices. Professor Franz Hamburger, von Pirquet's successor, declared renaissance of medicine is on Nazi program and the Führer, "like a physician by the grace of God," shows us the path to health.

Professor Bichel (4-13-35) speaking at the Berlin Medical Society, extolls nature cure medicine and nature nutrition.

At Joint Congress of Internal Medicine and New German Medicine (8-15-36), principal papers are concerned with nature cures, homeopathy, and herbal therapy; and the Director of Popular Healing Movement proclaims, "German man, in his unspoiled naturalness, experiences an emotional element in healing, a feeling that the hand of a true physician and a pair of soulful eyes . . . are of greater worth than physical and chemical apparatus.

At Joint Congress of Internal Medicine and Nature Cure Medicine (8-29-36),

aetiology regarded of slight importance in nature medicine; and recommended therapy for heart disease consists of intestinal massage, compresses to heart and genitals, and baths and fruit juices.

Programs of medical societies (1-26-34) must be approved. Acceptance of Nobel Prize (4-17-37) forbidden. Professors Domagk and Butenandt decline prize (12-11-37) under Nazi order. Professor Sauerbruck accepts (12-11-37) first German substitute. Scientists warned (11-6-37) to bring their scientific opinions into harmony with Nazi "Weltanschauung." Doctors ordered to omit (12-24-38) from bibliography papers written by Jews, and to subscribe to foreign medical journals of Aryan organizations only.

Concerning Some Effects on Public Health

Hitler informs Reichstag (7-29-33) of rise in suicides. Illegitimate births (1-27-34) increasing. Supply of prostitutes (11-24-34) (11-23-35) and venereal disease growing; likewise deaths from syphilis (12-22-34).

Health of youth (2-17-34) unfavorable. Tuberculous mounting (3-31-34) among hospital personnel and the SS (8-11-34). Majority of German people (3-31-34) suffer oral focal infections. Diphtheria (5-12-34) (4-6-40) increasing. Number of cripples (12-29-34) rising. Alcoholism up (2-19-38) (2-24-40). Accidents due to drunkenness (3-9-40) gaining. Rickets and other vitamin deficiency (2-24-40) increasing. Malnutrition appearing among religious Jews (5-16-36) following banning of ritual slaughter of animals.

Public and private welfare (7-29-33) placed under Nazi direction. Principles of National Socialism in public welfare (8-26-33) adopted by Health Service. Retrenchment (4-14-34) in "Krankenkasse." Blood donors must be pure Aryans. (8-24-35). Red Cross reorganized (8-19-33) in line with National Socialism. Its president replaced (1-20-34) by Nazi appointment.

Hereditary criteria suggested (6-3-39) to determine type of work assigned.

Settlements proposed (12-1-34) to promote hereditary healthy females. Woman's student Führer (9-23-39) declares ultimate vocation of women is marriage and family. During Nazi celebration (1-6-40) women march for Hitler and display signs reading, "Leader at thy command we will bear thee children."

Concerning Universities

A: Students

Student (7-22-33) admissions restricted. Student Führer announces (1-12-35) prerequisite for admission is one-half year work service or training in Hitler Youth or Storm Troops. Students wear Nazi uniform, subject to military drill, live in community house during first two semesters, and are trained in National Socialism. Since entrance depends on political usefulness (3-23-35), student Führer can designate for admission applicants without gymnasium attendance [standard secondary schooling]. During vacations required camp training to become "true

defenders of National Socialism." Student Führer may disturb (7-4-36) lecture not having roots in National-Socialism.

Fall in attendance (8-12-33); and male and female enrollment (3-3-34) (6-15-35) (12-7-35) dwindling. Female matriculation in medical, dental, and veterinary schools (6-13-36) decreasing. Shortage (1-22-38) of students, depletion in ranks (1-28-39) of younger university teachers, and lack (4-8-39) of trained professional men reported. Annual deficit of 5-8000 students (9-23-39) seriously affects future professional needs.

Nazi League of Students (11-30-35) formed and open to those of German blood from year 1800 (12-7-35). Deutsche Buschenschaft, a liberal student group more than one hundred years old (12-7-35), adopts National Socialism. Traditional student fraternities, after attack by Hitler Youth, take oath of loyalty. Last vestiges of student freedom suppressed with total subjection (7-4-36) to Nazi program. Students register (5-15-37) with local university Führer, submit to Nazi indoctrination, and serve for one year in Arbeitsdienst. Catholic student and alumni organizations (1-28-39) disbanded, and old fraternities replaced by "Cells of Nazi Party."

Non-Aryan medical students refused (3-3-34) license to practice. Admission to state medical examination (1-26-35) requires evidence of "reliability." Inadequate preparation (6-15-35) increases number who barely pass. Examination evaluated (7-4-36) on Nazi activity not knowledge.

Admission to medical school (7-8-39) is not dependent on college education. Before graduation (8-7-37), physical examination by Nazi party physician and data on genetic background required. Jews excluded from graduation; and those of mixed blood may take degree but will not be licensed. In doctoral dissertations (4-6-40), Jews may be cited in bibliography only if indispensable. Due to shortage of doctors (11-25-39), students granted diploma in last semester to enter hospital or military service.

B: Faculty

In Baden University, rector selected by Minister of Public Instruction (10-28-33), and made responsible for faculty appointments. Rectors of Universities replaced (1-2-35) by Nazis. Family history of scientists (9-7-35) investigated for non-Aryan strain. Dr. Wagner declares university policies controlled by Nazi party, and discussion (11-30-35) unnecessary. Faculties warned to integrate (7-9-38) with Nazi state; accept Nazi philosophy of "Weltanschauung" (7-23-38); and attain "the synthesis of the marching boot and the book." Universities told to espouse racial doctrines (1-8-39); become thoroughly Nazi; and relate scientific work to race.

Appointment as instructor (12-16-33) depends on service in Arbeitsdienst and principles (4-6-35) of National Socialism. Docents' Academy accepts (3-26-38) racial principles, and will be faithful to Nazi "Weltanschauung." Subsidies will depend (6-11-38) on support of Nazi program. Führer of instructors admits (1-28-39) shortage, but will see that university (12-9-39) and scholarship are painted brown and made to fit National Socialism.

"Leader" system in education provides (9-29-34) total control; and a new type of faculty will result without academic freedom. Only those who inculcate "Leader" principle and Nazi thought (1-12-35) may teach. Faculty must take (9-7-35) oath of support to Führer. "It is the duty of every intellectual to obey Hitler" warns Dr. Goebbels.

C: Medical Education

Course in race hygiene initiated by University of Halle (9-16-33). Mandatory course in race biology (10-21-33) for panel and district doctors. Instruction in heredity and eugenics is compulsory (12-9-33) in schools. League of Higher Institutions of Learning pledges (12-30-33) cooperation with government. Youth taught (6-1-35) in uniform, and racial mode of thinking inculcated.

Prussian Ministry of Public Instruction declares (8-5-33) curriculum and faculty shall be consistent with Nazi principles. Scientific efforts of university shall conform (1-12-35) with National Socialism. Philological Congress opposes (1-12-35) objective science, and demands political subjectivity replace intellectual objectivity. At Breslau University, the National Minister of Education declares science is specific of the national soul; and at Göttingen, that evil spirits lurk behind the words "academic freedom." Under Nazis (4-6-40), there is altered significance to culture and scholarship.

Minister of Science advises (4-14-34) shortening of medical curriculum. One semester (1-28-39) deleted; reduced (4-8-39) to ten semesters with less theoretical studies; and finally shortened to two years (4-6-40).

Medical students form training camps (2-8-36) for homeopathy, and motor, water, and herbal medicine. Nature cure methods introduced (4-12-37) in curriculum of graduate studies.

Goering prohibits vivisection (9-30-33) and threatens concentration camp for violators. Animal experiments (10-18-33) under strict regulations. Legislation protects animals (2-17-34) against unnecessary pain or damage to health.

Concerning Reactions Abroad

London Letters (6-3-33) (10-14-33) reports persecution of physicians and scientists. Einstein (10-28-33) addresses meeting to raise funds for refugee scientists. Nearly all medical and half of scientific refugees are Jews (1-27-34) (6-2-34). Aryan racial myths (9-8-34) spurned at International Anthropological Congress. Program of assistance (12-15-34) proposed. Lord Rutherford declares (4-6-35) 650 German scientists fled in past two years, and reports on assistance to victims (9-28-35). J. S. Huxley exposes racism (12-14-35) in "The Nordic Myth of Race in Germany." Since advent of Nazi government, over half of university teachers (1-25-36) (3-28-36) (5-9-36) dismissed. Since 1933 (9-4-37), 1600 scholars displaced, 70 percent are married. Influx of medical refugees (7-2-38) and medical students from Austria. Professor Boas, subjected to persecution in his old age, committed suicide. Every college and university in England (2-18-39) harbors at

least one refugee, and contributes liberally to assistance funds. Reception to refugee scholars (3-25-39). Decadence of science (11-25-39) under Nazi rule described:

English universities and learned societies decline invitation (4-18-39) to Heidelberg University celebration since truth and liberty are not accepted, over 40 professors expelled, appearance at celebration would indicate approval of Nazi regime, and German universities are emptied of their great and eminent teachers. Invitations not declined (9-1-36) by 18 American universities. Honorary degrees accepted by Professors K. Lake and R. A. Daly of Harvard, Professor H. Laughlin of Carnegie Institute, Dr. F. Thun, W. M. Garland, and Henry Jansen. Harvard delegates extend invitation to hosts to attend Harvard celebration.

Oxford rejects invitation (6-19-37) to University of Göttingen Celebration because it failed to protest the burning of its library books; expelled eminent teachers for racial and political reasons; submitted Nobel Prize winner Franck to abusive attacks when he defended his colleagues; and because the event is a celebration of the loss of learning, life, and liberty.

The JAMA, under "Current Comment" (5-13-33), stated that letters protesting Hitler's persecution of Jewish physicians were received, and that the New York State Medical Society and Philadelphia County Medical Society adopted a resolution on the subject. A summary, from German medical journals, described Hitler's suppression of German medicine. An editorial (5-5-34) compared human sterilization in Germany and the United States, and advised American doctors to retain scientific detachment in assessing the scientific and social results. "The Problem of the Refugee Physician" appeared in an editorial (9-17-38) which reported that the House of Delegates at the San Francisco sessions adopted a resolution that foreigners and graduates of foreign universities be requested to obtain full citizenship in the United States before being admitted to practice.

CONCLUSION

Letters from the Berlin correspondent did not appear after May 25, 1940; and German periodicals were not received after July 22, 1940.

The Berlin letters of the Hitler era reveal the regimentation and decline in the number and qualifications of students, the disaster to academic freedom, the rapid deterioration of medical education, the bankruptcy of medical science, and the appalling spectacle of the corruption and degeneration of medicine as it became a docile tool of Nazi racism.

Many German scientists and physicians placed themselves at the disposal of the Nazis, established the basis for irrational racial eugenics, and developed techniques for racial extermination and elimination of those "who consumed food but were of no use to the state."

Ludwig Aschoff, one of the few courageous German scientists in the midst of this frightful debacle, on the occasion of his seventieth birthday celebration cautioned: "Let there be but one opinion and you have an end of research and knowledge."

Not until 1950, when German physicians sought to participate in international conventions, did many of them admit their misdeeds.

MEDICAL HISTORICAL NEWS AND ACTIVITIES

AMERICAN ASSOCIATION FOR THE HISTORY OF MEDICINE

Annual Meeting, 1974

As previously announced, the next annual meeting will be held in Charleston, S.C., May 2-4, 1974. The Francis Marion has been designated the Headquarters hotel. Program Chairman is Dr. Gert H. Brieger, Box 2914, Duke University Medical Center, Durham, N.C. 28810.

Awards

The Welch Medal was awarded to Mrs. Margaret Tallmadge May of Ithaca, N.Y., for her book, *Galen on the Usefulness of the Parts of the Body*.

K. M. Flegel, McGill University, received the Osler Medal for his essay, "Gonorrhea and Syphilis: a Nosological History."

Osler Medal Essay Contest, 1974

Students in medical schools of the United States and Canada are eligible to enter the Osler Medal contest. Essays of a maximum length of 10,000 words must be submitted by March 1, 1974, to the Chairman of the Osler Medal Committee, Dr. Chester Burns, University of Texas Medical Branch, Galveston, Texas, 77550. The winner will be awarded the William Osler Medal and a cash prize of \$200.

ANNOUNCEMENTS

Appointments

President John R. Silber of Boston University has announced the appointment of Dr. Diana Long Hall as Assistant Professor of Biology and History, thus formalizing a link between the two departments. Dr. Hall earned her Ph.D. at Yale, where her dissertation (1966) was entitled "From Mayow to Haller: a History of Respiratory Physiology in the Early Eighteenth Century," the pre-phlogiston story lucidly set forth. This year's meeting of the Joint Atlantic Seminar in the History of Biology, held in Boston, April 6, 1973, was largely arranged and managed by Dr. Hall in association with Professor Everett Mendelsohn of Harvard.

Dr. John Eyler, post-doctoral fellow in the Department of the History of Medicine, University of Wisconsin Center for Health Sciences, has accepted an appointment to teach at Northwestern University for one year as a visiting professor. He will lecture on science, medicine, and society.

New Orleans

The History of Medicine Society of the Tulane University School of Medicine held its 40th annual banquet meeting on May 18. Mr. Charles Snyder, Librarian of the Lucian Lowe Library of Ophthalmology, Harvard Medical School, delivered the twenty-first annual B. Bernard Weinstein Lecture, speaking on the life of Sir William Wilde. The following awards were made to Tulane medical students for outstanding research papers on medical history: B. Bernard Weinstein Award to Leslie R. Coffman; Rudolph Matas Award and William L. Marmelzat Foundation Award, both to Vincente Lago; Isaac Ivan Lemann Award to William R. Raskin.

Niagara-on-the-Lake, Ontario

On June 6 the Niagara Apothecary Museum, an authentic restoration of a 19th-century pharmacy, received an Award of Merit from the American Association of State and Local History "in recognition of excellence and distinctiveness of achievement as judged against all such endeavors in North America." The curator of the museum is Ernst W. Stieb, Professor of the History of Pharmacy, University of Toronto.

Philadelphia

The Medical College of Pennsylvania and the Section on Medical History of the College of Physicians of Philadelphia presented the Kate Hurd Mead Lecture on May 16. Dr. John H. Talbott spoke on "Gout Caricatures of the 18th-20th Century."

University of Pennsylvania

Under the terms of a recent grant from the Josiah Macy, Jr. Foundation the Department of History and Sociology of Science and the Medical School of the University of Pennsylvania will continue and extend their cooperative work in the history of medicine. The grant will provide initial support for an assistant professor of the history of medicine. The new faculty member will join a graduate group with considerable strength in the history and sociology of medicine within the context of a department concerned to explore the interactions of science, technology and medicine. Those interested in this new position should write Dr. Arnold Thackray, Chairman, Department of History and Sociology of Science, E. F. Smith Chemistry Laboratory, University of Pennsylvania, Philadelphia, Pa. 19174.

PROGRAMS OF MEETINGS

George W. Corner History of Medicine Society, Rochester, N.Y.

May 17, 1973: "Ernest H. Starling and the Golden Age of English Physiology," Michael J. Lepore.

Henderson Medical History Society, Cleveland, Ohio

May 16, 1973: Dinner meeting: "Historical Notes on Science Lectures Given by John L. Riddell, M.D., an Ohio Physician of the 19th Century," Ralph W. Dexter.

Washington Society for the History of Medicine, Washington, D.C.

May 19, 1973: Dinner meeting: "Life under the Golden Bough," P. William Filby.

NEWS FROM ABROAD

Paris

The Société Internationale d' Histoire de la Médecine held its annual meeting in Paris at the Faculté de Médecine on May 26, under the presidency of Dr. F. N. L. Poynter. The term of the vice-president, Dr. Carlos Martinez-Duran, having expired, an election was held and Dr. De la Broquerie Fortier of Quebec was unanimously elected. Dr. Poynter, who continues as president, announced that the proceedings of the International Congress held in London last September are to be published by the end of 1973. Of new members admitted to the Société, 35 are from North America.

Germany

Ceremonies marking the opening of the Medical Historical Museum of Ingolstadt were held on June 23. Dr. Dr. h.c. Heinz Goerke spoke on "Das Medizinhistorische Museum in Ingolstadt—Entstehung und Aufgabe."

Great Britain

The summer meeting of the Bibliographical Society was held at the Library of the Wellcome Institute of the History of Medicine. The Librarian, Mr. Eric Gaskell, gave a short talk on the Wellcome Library and its contents. Mr. Robin Price discussed Medical Americana, and Miss M. Winder described the contents of the Library's Oriental Collections.

Switzerland

The Schweizerische Gesellschaft für Geschichte der Medizin und der Naturwissenschaften will hold its 1973 meeting in conjunction with the 153rd meeting of the Schweizerische Naturforschende Gesellschaft in Lugano, Ticino, October 19-21, 1973.

BOOK REVIEWS

Paul A. Janssens. *Palaeopathology; Diseases and Injuries of Prehistoric Man*. Translated into English by Ida Dequeecker. London: John Baker; New York: Humanities Press, 1970. xiii + 170 pp. 75 ill. \$8.50.

This book contains a foreword confusingly dated August 1958 and October 1965. The publisher's inscription is dated 1970. The relevance of these dates will become clearer when we discuss the bibliography.

The author expresses the hope "that this work may contribute to a better knowledge of palaeopathology in particular and prehistory in general." This must stand as a declaration of purpose. The scope is suggested by the subtitle, "Diseases and Injuries of Prehistoric Man." By these indications the reader is led to expect a treatise on human palaeopathology.

The table of contents provides disquieting intimations of disorder, which are promptly confirmed by the text. In chapter I, titled "Definition," palaeopathology is said to be the study of the diseases of past ages and in particular of those times for which no literary sources exist. In the same chapter medicine is defined as comprising "every action carried out to safeguard man against disease." A chapter titled "Influence of Climate, Economy, and Environment" disposes of these aspects in two pages. Then comes, surprisingly, a chapter titled "Definition of Disease." The surprises continue. A chapter titled "Traumata" is followed by one titled "Injuries from Stone Weapons." Chapter 10 is devoted to prehistoric art, but chapter 13 deals with "Venus Figurines" and, curiously, includes two paragraphs on prehistoric population density. This is followed by a separate chapter on the average duration of life in prehistoric times. A later chapter—a very interesting one—deals with prehistoric representations of human hands. The penultimate chapter, titled "Therapy," discusses *inter alia* burial, the psychology and religion of prehistoric man, and some miscellaneous matters. I have described these arrangements in detail in order to explain why I consider Janssens' work a loosely connected series of digressive essays and not a systematic treatise.

Some of the authors whom Dr. Janssens quotes exemplify the pestilential disease that afflicts the literature of palaeopathology, viz. the confident utterance of pronouncements that are not supported by proof and that, indeed, may be incapable of proof. Thus:

Among all people, magic before being based on observation, draws its origin from superstition. Broca (p. 45).

Through inability to grasp the difference between objective facts and his own subjective impressions everything about him, i.e. prehistoric man, was real; mental pictures were identical with reality . . . Mauduit (p. 57).

Dr. Janssens' text emphasizes the diseases of prehistoric men in western Europe. It contains incidental information about ancient Egypt and small bits about the

western hemisphere. There are occasional passages, of doubtful relevance, on mosasaurs, camels, and sabre-toothed tigers, and on rituals involving the skull of the cave bear. There is a discussion, clearly irrelevant, of the ritual uses of flint.

In discussing some of the major problems of human palaeopathology, especially the origins of syphilis, Dr. Janssens offers a careful analysis and a balanced discussion. He comments sensibly about commentators who "subscribe to the sentimental speculation that prehistoric man must have had a good knowledge of orthopaedics," since many healed fractures have been found. He rejects the ritual factor as an explanation of trepanation. Wisely he says:

It has become a habit to compare the life and customs of palaeolithic man to those of primitives today, and even to deduce the one from the other. This is a little like building a house on sand. Contemporary climate and tribal differences have at any one time such widespread interrelated effects that such comparisons are hardly applicable in palaeopathology.

Several of Janssens' chapters are especially interesting. For example, under "Skeletal Remains" he discusses sources of error in interpretation, conditions affecting preservation of skeletons, post-mortem injuries such as ritual fracture, and cremation. The chapter is marred by misuse of the word *lesion* to include artefacts, viz. "Dripping water can cause very confusing lesions."

Of equal interest is the eighth chapter, "Traumata." Here the major focus is the human skull, which has taken beatings since time immemorial. Janssens rapidly summarizes the burden laid upon the head of Pekin man, Neanderthal man, Cro-Magnon man, and a host of other sufferers, down to and including Calvin Wells' mediaeval horseman of Ipswich. Also worthy of mention is an early Belgian victim of an occupational accident, the man from Obourg who was killed by the collapse of a neolithic flint mine.

The favorable impression created by these chapters is dissipated by a number of egregious statements:

Seldom does the primitive survive until the physiological decline of the secreting glands, which means that the menopause or the andropause occur seldom in primitives . . . (Does Dr. Janssens believe in the male menopause?)

Sick animals eat certain varieties of grass, and wounded animals go and sit in the mud. They also use mud to get rid of parasites. This action is the basis of hygiene. . .

And what of the remarkable comment which is part of the author's Conclusion?

For highly civilized man the time of natural selection is past. The weaker are kept alive by modern therapeutic means, while sturdy youth is decimated by war. But modern medicine has another danger: the use, or rather abuse, of radioactivity, for therapeutic as well as diagnostic purposes. . . . Rays can cause change in the genes of the egg- and sperm-cells. Whether these mutations will be advantageous or disadvantageous for posterity is to be seen.

Near the end of the volume there is a glossary of about 160 terms, e.g. "TIBIA The shinbone," which suggests that the book was intended for laymen. Unfortunately it contains such statements as "CALLUS Excess bone produced in repair of fractures" and "GLIOMA A swelling of the nerves" and "METASTASIS Proliferation of a cancerous tumor" and "GYNECOMASTIA The formation of breasts on men."

Other asperities involve the use of Latin terminology for structures and diseases that have common English names, e.g. *corpora vertebrarum*, *collum femoris*; the use of strange expressions such as chronic joint arthritis (p. 81) and chronic evolutive polyarthritis (p. 89); and frequent misspellings of names, e.g. Mandam for Mandan, Kuhn for Kühn, van Gehuchte for van Gehuchten, Desbasheh for Deshasheh, and Manduit for Mauduit (three times).

The list of 194 references leaves much to be desired. The important work of Joseph Jones on prehistoric North American syphilis, published in 1876 in the *Smithsonian Contributions to Knowledge*, is cited at second hand via Wakefield and Dellinger in *Ciba Symposia*! Galen is cited via one Hofschlager in the *Ciba Zeitschrift*. An utterly obscure 17th-century author, Jehan Taxil, is accorded a first-hand reference. Ruffer, Williams, and MacCallum are mentioned or cited in the text but omitted from the bibliography.

Of the 194 items which compose the list of references, 26 were published after 1960. Of these 26, 11 were written in whole or part by Janssens and 8 more by Dr. Calvin Wells of Norfolk. The latest entry I was able to find is dated 1965, which agrees with the second of the two dates in the author's foreword.

In addition to omitting recent contributions the author has overlooked important American contributions that were available before his text was written.

To cap it all, the author's name is misspelled on the spine of the book. He deserves better luck than this.

Reviewed by SAUL JARCHO, M.D., Editor in Chief, Bulletin of the New York Academy of Medicine.

Owsei Temkin. *The Falling Sickness; a History of Epilepsy from the Greeks to the Beginnings of Modern Neurology*. Second edition, revised, Baltimore & London: The John Hopkins Press, 1971. xv + 467 pp. Ill. \$15.00.

Though a quarter century has passed since the first edition of Professor Temkin's book appeared, it has remained the unchallenged authority and source book on the history of epilepsy in Western civilization.

This eventful quarter century has witnessed a phenomenal development in laboratory research related to epilepsy, particularly in neurophysiology, neurochemistry, and neuropharmacology. Electroencephalography has become a valuable clinical research tool, neurosurgery has developed techniques for the successful treatment of focal epilepsy, and neurological management of epilepsy has been greatly improved by new and more effective antiepileptic drugs. Though physicians have been aware of the bizarre changes in personality and behaviour which may be associated with epilepsy since the time of Hippocrates, it is only in recent years that the importance of "temporal lobe epilepsy" has been clearly recognised. It has now become a special area of intensive investigation by neurologists and psychiatrists.

Another important development in the past quarter century has been the expansion of local, national and international organizations (such as the International League Against Epilepsy) to promote the social welfare of persons with epilepsy. The improved outlook for the epileptic with modern medical and surgical treatment is emphasized; public educational campaigns are used to combat the traditional prejudices and superstitions which are so vividly documented in *The Falling Sickness*. While much of this astonishing progress has been due to the development of new and refined techniques for studying the nervous system, it has been guided mainly by the concepts and principles expounded by Hughlings Jackson in the nineteenth century. There is every indication that his influence will continue. Dr. Temkin gives Jackson his rightful place in the history of epilepsy, and readers will find this section of the book particularly illuminating. In 1873 Jackson gave his oft-quoted definition of epilepsy as "the name for occasional sudden, excessive, rapid and local discharges of grey matter." In 1973 neurophysiologists have not improved his definition, though much detail has been added, in literally thousands of scientific publications. To use Jackson's famous phrase, a focal cerebral seizure is still "an experiment of Nature," which can, if properly analysed, reveal the secrets of functional localization within the brain. We still think in terms of levels of integration within the nervous system, though modern views are less schematic than in Jackson's day and the discovery of the reticular activating system has added a new element of great importance. The relationship between focal and generalized forms of epilepsy, and between the so-called "primary" and "secondary" epilepsies, is still obscure. The genetic factors in epilepsy are not yet understood. The psychological and behavioural changes observed in some patients remain a challenging problem for neuropsychiatry. These are some of the concerns our generation of neurologists continues to share with Hughlings Jackson.

In preparing the second edition of *The Falling Sickness*, Dr. Temkin has taken note of these recent scientific advances but has found no need to change the general character and plan of his study. The historical perspective of epilepsy has not changed.

He subdivides his subject, as before, into six parts—Antiquity, the Middle Ages, the Renaissance, the Great Systems and the Period of Enlightenment, the Nineteenth Century, and a final section on the Age of Hughlings Jackson, followed by a short Epilogue. While there are no major changes in the first five parts, the author has made a careful revision of the text including many footnotes, and has added over 400 new references to the bibliography. The sixth part, on the Age of Hughlings Jackson, has been revised and enlarged, and includes a valuable new section on Jackson's "dreamy state." The final chapter entitled "The End of the Falling Sickness?" has been completely rewritten and enlarged and is of particular interest. It includes an historical discussion of epilepsy under the headings of (1) Idiopathic Epilepsy, (2) Epilepsy and Hysteria, (3) Crime, Religion and Epileptic Character, and (4) The World of the Epileptic.

The book is compact in size, well printed, and pleasantly bound. It has an

excellent bibliography, an index of personal names, and a very detailed index to subjects. There are six illustrations.

Everyone interested in the field of epilepsy should have the historical perspective which this scholarly book provides. It should be read by neurologists, young and old alike, and particularly the younger ones. However, it is not a book to be read through easily from cover to cover, but should rather be sampled, a chapter at a time. I suggest starting with Part Six, which deals with Hughlings Jackson and his forerunners, and then going back to Hippocrates and the Sacred Disease in Part One, before dipping into the intervening chapters. The fine bibliography should be a stimulating guide to further reading in the history of epilepsy.

Reviewed by FRANCIS L. McNAUGHTON, M.D., Professor of Neurology,
McGill University School of Medicine, Montreal, Canada.

Gert H. Brieger (Editor). *Medical America in the Nineteenth Century*. Readings from Literature. Baltimore: The Johns Hopkins Press, 1972. x+ 338 pp. \$12.50.

Those who see medical history as the record of past error and darkness before an ever imminent dawn will find darkness enough in this collection of essays. Those who believe that medicine made greater progress in the 19th Century than at any time before or since will also be satisfied by this book. Neither group will fail to recognize themes and problems which are still with us today or fail to be impressed with how perceptive men could be so long ago.

Between 1811 and 1893, the period spanned by the 31 essays in this source book, American medicine evolved from its colonial beginning—its clerical background well illustrated by the homiletic tone of the essay by Benjamin Rush—to the wholly secular and inductive character it had acquired by the time of William Welch's matter-of-fact announcement of the Johns Hopkins Medical School in 1893. This transformation was, perhaps, one of the most remarkable changes which ever took place in medicine. In spite of this change, however, many themes encountered in this book persist.

Daniel Drake, in the early 19th century, identified some of the faults of American medical education and recognized that the main impediment to correction was financial. Prosperity did later allow important improvements but economic considerations are still, in our own time, shaping curricular "innovations."

Andrew Boardman, a medical student, scooped Abraham Flexner by 70 years with his 1840 exposé of discrepancies between the claims in a published medical school catalogue and "how it really was." Not all current catalogues have changed in this respect.

What reader will not think of his own time when considering Pliny Earle's 1879 description of the mass public enthusiasm for building mental asylums as a result of

unrealistic therapeutic expectations which resulted from "the stimulating, the provocative precedent of erroneous percentages. . . and the competitive ability of . . . colleagues in the specialty."

The four essays by Jacob Bigelow, Elisha Bartlett, Nathan Davis and Austin Flint describe beautifully the extended conflict between the proponents of "art" and the supporters of "nature" in which the profession was immersed throughout the 19th century. Though therapeutic enthusiasts seem again ascendent, the matter is still unsettled.

It would be difficult to find fault with Dr. Brieger's selections. A wide scope of topics is included. There is America's influence on surgery—imaginative daring illustrated by McDowell's ovariectomy, and the change of surgical procedures from speedy spectaculars endured by patients in agony to the meticulously careful and mercifully painless procedures made possible by the public recognition of ether described in Henry Bigelow's article. The development of sanitation, of military medicine, of modern hospitals, and of the application of vital statistics are represented. The growth of microbiology, the expansion of science in medicine, is reserved for a succeeding volume. The reader will find the brief introductions not only helpful in providing historical continuity but interesting in themselves.

It would be unlikely that any editor could satisfy the fancies or prejudices of all his readers and still face the limitations posed by the economics of publishing. Some recognition of the struggle of the practitioner for economic survival in the 19th century, or of the deteriorating stature of professional men as community leaders in a commercial society founded on laissez-faire—a society which withdrew its earlier legislative sanction from its medical profession—were important aspects of 19th-century American medicine which might have been included. It would be interesting, also, to read of the average practitioner's day both to understand just what he did and why he was able to spend so much time doing it.

Medical America in the 19th Century is instructive and enjoyable reading not only for historians generally, but for the general public and especially for those whose legislative and administrative posts give them special influence over the future of the health and welfare of Americans.

Reviewed by EDWARD C. ATWATER, M.D., Associate Professor of Medicine and Assistant Professor of the History of Medicine, University of Rochester School of Medicine, Rochester, N.Y.

THE BULLETIN RECENTLY RECEIVED*

- Raffaello Bernabeo. *Carlo Matteucci (1811-1868): Profilo della via e dell'opera*. Università degli Studi di Ferrara, 1972 (Quaderni di Storia della Scienza e della Medicina, XI). 37 pp. Ill.
- Marcel H. Bickel. *Marceli Nencki, 1847-1901*. Bern-Stuttgart-Wien: Verlag Hans Huber, 1972 (Berner Beiträge zur Geschichte der Medizin und der Naturwissenschaften, N.F. Bd. 5). 102 pp. Ill. Fr. 18/DM 16.
- Roy A. Bowers and David L. Cowen. *The Rho Chi Society. The Development of the Honor Society of American Pharmacy*. 4th ed. Columbus, Ohio: The Rho Chi Society, 1972. xxvi + 57 pp. Ill. \$2.00 (hardbound); \$1.00 (paperbound).
- Carlo M. Cipolla. *Cristofano and the Plague: a Study in the History of Public Health in the Age of Galileo*. Berkeley-Los Angeles: University of California Press, 1973. 188 pp. Ill. \$7.50.
- Allen G. Debus (Editor). *Science, Medicine and Society in the Renaissance*. Essays to honor Walter Pagel. New York: Science History Publications. A Division of Neale Watson Academic Publications, 1972. 2 vols. Ill. \$50.00 (\$35.00 prepaid).
- Michael J. Harner (Editor). *Hallucinogens and Shamanism*. New York: Oxford University Press, 1973. xv + 200 pp. Ill. \$8.50 (hardbound), \$1.95 (paperbound).
- H. R. Hays. *Birds, Beasts, and Men: a Humanist History of Zoology*. Baltimore, Md.: Penguin Books, 1973. 383 pp. \$1.95 (paperbound).
- Clive McCay. *Notes on the History of Nutrition Research*. Edited by F. Verzer. Berne-Stuttgart-Vienna: Hans Huber, 1973. 234 pp. Ill. Fr. 42/DM 38.
- Benjamin W. McCready. *On the Influence of Trades, Professions, and Occupations in the United States, in the Production of Disease*. With an introductory essay by Genevieve Miller. New York: Arno Press & The New York Times, 1972. 129 pp.
- Giuseppe Moruzzi. *L'opera elettrofisiologica di Carlo Matteucci: il contributo di Carlo Matteucci alla creazione del modello fisico del nervo*. Università degli Studi di Ferrara, 1973 (Quaderni di Storia della Scienza e della Medicina, XII). 53 pp. Ill.
- James Cowles Prichard. *Researches into the Physical History of Man*. Edited with an introductory essay by George W. Stocking, Jr. Chicago and London: University of Chicago Press, 1973. cxliv + 568 pp. \$14.50.
- Karl E. Rothschuh. *History of Physiology*. Translated and edited, with a new English bibliography, by Guenter B. Risse. Huntington, N.Y.: Robert E. Krieger Publishing Co., 1973. xxi + 379 pp. Ill \$20.00
- Leong T. Tan, Margaret Y.-C. Tan and Ilza Veith. *Acupuncture Therapy; Current Chinese Practice*. Philadelphia: Temple University Press, 1973. xii + 159 pp. Ill. \$15.00.

*The *Bulletin* reserves freedom of decision as to the publications to be listed in this section. Items received, other than those assigned for review, are ultimately incorporated into the collection of the Institute of the History of Medicine.

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Thomas Titles

Broaden Your

Perspective

A PICTORIAL HISTORY OF MEDICINE (4th Ptg.) by **Otto L. Bettmann**, *Director, Bettmann Archives, New York City*. "Certainly one of the most vivid presentations of the history of medicine"—*New York Times*. "The history of medicine relies heavily on pictures to tell its story—in fact, no page is without at least one illustration and most pages have several."—*The Journal of the American Medical Association*. '72, 336 pp., (8½ x 11), 1000 il., \$13.50

THE PAP SMEAR: Life of George N. Papanicolaou by **D. Erskine Carmichael**, *University of Alabama in Birmingham*. *Foreword by Charles S. Cameron*. This volume traces the environment and events which shaped the life of Dr. Papanicolaou—his personality, ambition and self-discipline. He termed his pap smear the result of serendipity, having developed the human smear as an outgrowth of his work in determining the time of ovulating in guinea pigs. This book points out the importance and value of any research program, the significance of which might not be realized until much later. '73, 140 pp., 51 il., \$8.00

THE PHYSICIAN'S CREED: An Anthology of Medical Prayers, Oaths and Codes of Ethics Written and Recited by Medical Practitioners Through the Ages by **M. B. Etziony**. Through the oaths and prayers of this collection, the history of medicine is expressed in its own way . . . its prevalent credos, aims and ethical orientation are illustrated. Negative findings are interesting—lack of prayers or oaths in certain cultures or ages is very significant. '73, 192 pp. (6¾ x 9¾), 35 il., \$7.50

DR. W. C. RÖNTGEN (2nd Ed., 2nd Ptg.) by **Otto Glasser**, *Cleveland Clinic*. "This book is well written and can be read with profit by the nonscientist . . . a genuine insight into W. C. Röntgen, man and scientist, for the general reader."—*American Scientist*. "This thin volume is a 'must' for the library of every x-ray technician . . . the book itself is a joy to behold, with its excellent type, fine paper, and attractive binding."—*Radiologic Technology*. '72, 192 pp., 17 il., \$7.50

HEAD INJURY FROM ANTIQUITY TO THE PRESENT WITH SPECIAL REFERENCE TO PENETRATING HEAD WOUNDS by **E. S. Gurdjian**, *Wayne State Univ., Detroit, Michigan*. This monograph discusses prehistoric and neolithic experiences with head operations, including trephination of the skull. Some examples of skulls perforated by rock, sling or mace are shown in hieroglyphic notations from experiences twenty centuries before Christ. The author compares antiquity experiences of very high mortality from body and head wounds with mortalities and morbidities in more recent wars. '73, 148 pp., 58 il., 4 tables, \$11.75

THE HISTORY OF UROLOGY by **Leonard J. T. Murphy**, *St. Vincent's Hospital, Melbourne, Australia*. A translation into English of Ernest Desnos' classical "Histoire de l'Urologie," comprises the first part of this volume. The second part traces the development of modern urology from the period when anesthesia and asepsis removed the barriers, and allowed the surgical giants of the latter half of the last century to lay the foundations of this specialty. '72, 548 pp. (7 x 10), 461 il., \$32.50

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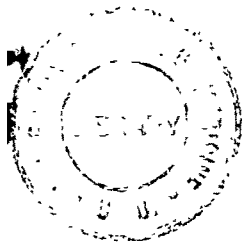
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ANDERSONVILLE—A SOUTHERN SURGEON'S STORY

JAMES O. BREEDEN

The haggard, distressed countenances of these miserable, complaining, dejected living skeletons crying for medicine and food . . . formed a picture of helpless, hopeless misery, which it would be impossible to portray by words or by the brush.

The arrest, condemnation, and execution of Henry Wirz spurred a heated debate over Andersonville prison. On the one hand, outraged Northerners have vehemently contended that Andersonville's unspeakable horrors were the result of a cold-blooded conspiracy instigated by leading Confederates to murder helpless prisoners; on the other hand, the Southern apologists, although fewer in number, have vociferously countered, attributing the suffering and death to the prostrate state of the Confederacy. The arguments on both sides are painfully lacking in objectivity. Hence, the inevitable result has been a confusion of voices.¹

Yet one voice stands out from all the rest—that of Dr. Joseph Jones. He, too, was partisan, absolving the South of all blame for Andersonville. But unlike most, in both North and South, Jones painstakingly

¹ The best account of this confusion of voices is Ovid Futch's *History of Andersonville Prison* (Gainesville: University of Florida Press, 1968), 133-42.



portrayed conditions there in a full and frank fashion from firsthand knowledge. His motive for going to Andersonville was equally commendable. Far from using these prisoners for guinea pigs, as his detractors have loudly claimed, Jones genuinely hoped that an exhaustive investigation of "the causes of the great mortality amongst the Federal prisoners" would reveal "the best methods of remedying existing evils."²

Joseph Jones, the descendant of a prominent family, was born in Liberty County, Georgia, on September 6, 1833. After graduation from Princeton in 1853, he enrolled in the medical department of the University of Pennsylvania and received his M.D. three years later. He developed a seemingly insatiable interest in medical research during his professional training and upon his return home decided to pursue a career in teaching, believing that it would afford him the best opportunity to engage in scientific investigation. Subsequently Jones taught at the Savannah Medical College, the University of Georgia in Athens, and the Medical College of Georgia in Augusta. By the outbreak of the Civil War he had become a respected medical professor and an expert on Southern diseases, especially the various fevers that preyed upon the nineteenth-century South.

Jones's greatest achievement was his remarkable Civil War medical investigations. At first, however, he succumbed to the emotional

² Joseph Jones, "Investigations upon the Diseases of the Federal Prisoners Confined to Camp Sumpter, Andersonville, Ga.," 477-80, in United States Sanitary Commission, *Sanitary Memoirs of the War of the Rebellion* (2 vols., New York, 1867-1869), I, 470-655; hereafter cited as Jones, "Investigations—Andersonville." This report consists of three large handwritten volumes. Volumes 1 and 3 are in the Joseph Jones Collection at Tulane University; hereafter cited as JJ-TU. Volume 2 is in the Joseph Jones Collection at Louisiana State University, Baton Rouge; hereafter cited as JJ-LSU. The published version of Jones's report has been used in the preparation of this paper, and all page numbers refer to it. The reaction to Jones's research at Andersonville was largely sectional—Northerners tended to criticize it while Southerners praised it. For a sampling of Northern views, see Augustus C. Hamlin, *Martyria; or, Andersonville Prison* (Boston, 1866); Asa B. Isham, Henry M. Davidson, and Henry B. Furness, *Prisoners of War and Military Prisons* (Cincinnati, 1890); Norton P. Chipman, *The Tragedy of Andersonville* (rev. ed., San Francisco, 1911); Ambrose Spencer, a Unionist living near the prison, parroted Chipman's indictment of Jones in *A Narrative of Andersonville* (New York, 1866). Two articles of interest are "Treatment of prisoners in the Civil War," *Nation*, Apr. 5, 1877, 25-211-12; John H. Stibbs, "Andersonville and the trial of Henry Wirz," *Iowa J. Hist. & Politics*, Jan. 1911, 9: 33-56. For the Southern reaction, see Jefferson Davis, "Andersonville and other war-prisons," *Belford's Mag.*, Jan. and Feb. 1890, 4: 161-78, 337-53; R. Randolph Stevenson, *The Southern Side; or, Andersonville Prison* (Baltimore, 1876). James M. Page, a former prisoner at Andersonville, wrote a defense of the South and Jones in collaboration with M. J. Haley entitled *The True Story of Andersonville Prison* (New York, 1908).

patriotism that characterized the South in the early days of the war and put aside his medical training to enlist as a private in the Liberty Independent Troop. He soon realized the folly of this act and at the end of his six-month enlistment accepted a Confederate commission as full surgeon with the rank of major, a position he held until the end of the war. He came to view the hostilities as a giant laboratory in which to learn valuable lessons for peacetime purposes, and instead of becoming a combat surgeon, he prevailed upon Surgeon General Samuel P. Moore to allow him to visit and to conduct investigations in the armies, hospitals, and military prisons of the Confederacy. Subsequently he investigated medical problems in the armies of Northern Virginia and Tennessee; in the large hospitals at Richmond, Charlottesville, Charleston, Savannah, Augusta, Macon, and Atlanta; and in the main Southern prisoner of war camps—Belle Isle, Libby Prison, and Andersonville.

Despite wartime conditions, Jones was able to undertake detailed studies of such diseases as tetanus, gangrene, typhoid fever, malaria, smallpox, scurvy, diarrhea, dysentery, and pneumonia. An avid microscopist, he saw the bacilli of gangrene and typhoid fever but, bound to the contemporary miasmatic theory of disease, failed to see their causal relationship to the latter.³

Persistent reports of the exceptionally high mortality among the Union prisoners at Andersonville during the summer of 1864 aroused Jones's curiosity, prompting him to seek the Surgeon General's permission to visit the prison "with the design of instituting a series of inquiries upon the nature and causes of the prevailing diseases."⁴ Moore, intrigued by "the field of pathological investigation afforded by the large collection of Federal prisoners in Georgia," approved his request. Considering Jones's standing orders which authorized his wide-ranging research insufficient for such an unusual undertaking, he provided him with special instructions. Jones was sent to Andersonville in hopes "that results of value to the Profession may be obtained by a careful investigation of the effects of disease upon this large body of

³ James O. Breeden, "Joseph Jones, a major source for nineteenth century Southern medical history," Tulane University Medical Faculty, *Bulletin*, Feb. 1967, 26: 41-48.

⁴ Jones, "Investigations—Andersonville," 471. Opportunities for the study of fevers seemed especially appealing. "It was believed," Jones pointed out, "that a large body of men from the northern portion of the United States, suddenly transported to a warm Southern climate, and confined upon a small portion of land, would furnish an excellent field for the investigation of the relations of typhus, typhoid, and malarial fevers," *ibid.*

Men subjected to a decided change of Climate, and to the circumstances peculiar to prison life."⁵

Accompanied by Louis Manigault, his secretary, Jones arrived at Andersonville in mid-September 1864. He had no trouble gaining access to the hospital and morgue, or dead house as the latter was called, both of which were outside the prison walls. Despite his orders, however, Captain Henry Wirz, the prison commandant, flatly refused him admission to the stockade. Jones appealed to Brigadier-General John H. Winder, the post commander, calling attention to his special instructions from the Surgeon General. Winder intervened and Wirz backed down.⁶

Jones found himself confronted by a "field of great extent and of extraordinary interest." There were more than 5,000 seriously sick Union soldiers in the stockade and prison hospital, and deaths ranged from 90 to 130 daily. Almost 10,000 deaths had occurred in the seven months between the establishment of the prison and his visit, nearly one-third of the prison population. Desirous of learning the true reasons for the prisoners' plight, Jones judiciously utilized his two-week stay to study the medical topography of the area, to screen many of the prisoners—both sick and well—, to perform numerous post-mortem examinations, and to execute frequent drawings of the diseases structures which his autopsies uncovered.⁷

He planned to embody his findings in a report for the Surgeon General, but Lee's surrender found this project unfinished. "Broken in health, fortune, and spirits," Jones now desired only "peace and rest" and filed away his wartime research to contend with "the pressing necessities of the times."⁸ The decision to try Henry Wirz for the horrors of Andersonville dashed his hopes of being left alone. This decision placed Jones in an uncomfortable position, for he feared that his research among the Union soldiers imprisoned there would be discovered and declared documented evidence of Confederate atrocities. "I desired especially," he wrote later, "that the report on the

⁵ Samuel P. Moore to Surgeon Isaiah H. White, August 6, 1864, JJ-TU. Moore instructed White, the surgeon in charge, to accord Jones every facility and complete cooperation in his investigations "in order that this great . . . field may be explored for the benefit of the Medical Department of the Confederate Army," *ibid.*

⁶ R. Q. Mallard to Mary Jones, September 12, 1864, Charles Colcock Jones Papers; Jones, "Investigations—Andersonville," 472-73.

⁷ Joseph Jones to Samuel P. Moore, October 19, 1864, in Louis Manigault, "Journal." This journal is privately owned, but there is a microfilm copy in JJ-TU.

⁸ Jones, "Investigations—Andersonville," 477.

Federal prisoners at Andersonville should never see the light of day, because it was prepared solely for the eye of the Surgeon-General of the Confederate States Army; and the frank manner in which all the subject had been discussed, would only engender angry feelings, and place weapons in the hands of the victors. . . ."⁹ His worst fears materialized. On September 22, 1865, without warning, he was ordered to report to Colonel Norton P. Chipman, the prosecuting attorney in the Wirz case, in Washington as a witness in the proceedings and to surrender to him "all papers, reports, records, etc., of any kind in his possession, pertaining to the Andersonville Prison."¹⁰ Jones protested strongly, insisting that he had "*none* of the *original* records of Andersonville," only copies of some of the prison's hospital records which had been incorporated in an unfinished report.¹¹ His protests were in vain.

On October 7, 1865, near the end of the three-month trial, Jones was sworn as a witness. In striking contrast with former Andersonville inmates who were encouraged to paint a devastating picture of the prison and Wirz, he was neither asked nor allowed to offer any mitigating or extenuating circumstances for conditions there. His brief testimony was limited largely to the identification of the prosecution's abstract of his report. To his great dismay, the 600-page manuscript had been reduced to a mere 20 pages. Much of the material deleted had, indeed, been extraneous, but Jones was justifiably upset when he discovered that any passage favorable to the Confederacy and even those in which he had attempted to explain the reasons for Andersonville's horrors had been expunged. Equally outrageous, all of his recommendations for the alleviation of these evils had been left out. The remaining portions presented Andersonville at its worst.¹² Chip-

⁹ *Ibid.*

¹⁰ *Ibid.*, 478.

¹¹ *Ibid.* The existence of Jones's report may have been discovered through a slip of his own tongue. "I have since learned," he later remarked, "that the United States authorities gained knowledge of the fact that I had inspected Andersonville through information clandestinely furnished by a distinguished member of the medical profession of the North, who, after the close of the war, had shared the hospitality of my own home." Joseph Jones, "The treatment of prisoners during the War between the States," *Southern Historical Society, Papers*, 1876, 1 171-74. Chipman, on the other hand, insisted that he had learned of the manuscript through Southern sources. Norton P. Chipman, *The Horrors of Andersonville Rebel Prison* (San Francisco, 1891), 85.

¹² For Jones's testimony and the abstract of his report, see U. S. House of Representatives, *Trial of Henry Wirz*, Exec. Doc. no. 23, 40th Cong., 2nd Sess. (Washington, 1868), 618-42; hereafter cited as *Trial of Henry Wirz*. This abstract was also included in the *Official Records*, see *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies* (70 vols. in 128, Washington, 1880-1901), ser. 2, vol. 8, 588-632.

man later admitted this, stating that "for our present purpose it furnished indubitable proof that the horrors of Andersonville have not been overdrawn . . . in fact, for graphic and harrowing description of human suffering, it excels anything spoken by witnesses who were themselves victims."¹³

The true significance of Jones's Andersonville investigations was gradually recognized—even by his former foes. This recognition began as early as 1867 when the United States Sanitary Commission included his report in the first volume of its *Sanitary Memoirs of the War of the Rebellion*. He was the only Southern author so honored. The published manuscript was essentially a copy of the one confiscated and emasculated by the Wirz tribunal. Jones's only additions were the completion of several unfinished sections and a short preface in which he introduced his investigations.¹⁴ With the exception of some abridgement necessitated by its great length, the report was published without alteration. The deleted portions—a number of unnecessary tables, a large amount of extraneous background material, a chapter on post-mortem findings in cases of diarrhea, dysentery, scurvy, and gangrene, and a chapter on hospital gangrene—neither detracted from nor changed the nature of the study. Indeed, almost as if he wished to rectify the injustice handed it at the Wirz trial, the editor emphasized: "In making the necessary abridgement nothing has been excluded of importance as affecting either the investigations or the conclusions deduced there-from by Professor Jones."¹⁵

¹³ Chipman, *The Tragedy of Andersonville*, 80-81. According to the trial record, the prosecution viewed Jones's report as concrete proof of the Confederate government's knowledge of the condition of the prisoners and subsequent failure to provide them with adequate quarters and medical attention. *Trial of Henry Wirz*, 818-47.

¹⁴ Jones, "Investigations—Andersonville," 471-82. The bibliographic citing for this particular volume of the *Sanitary Memoirs* is Austin Flint (ed.), *Contributions Relating to the Causation and Prevention of Disease, and to Camp Diseases; Together with a Report of the Diseases, etc., Among the Prisoners at Andersonville, Ga.* (New York, 1867). It also contained a second Jones study; see Joseph Jones, "On the Prevalence and Fatality of Pneumonia and Typhoid Fever in the Confederate Army during the War of 1861-1865," 335-59.

¹⁵ Jones, "Investigations—Andersonville," 470. "As an Official Report, by a Confederate medical officer," the editor added, "this Section will have interest for all classes of readers," *ibid.* That more editing was not done is surprising, for this manuscript exhibited all of Jones's shortcomings as a writer—verbosity, repetition, and the inclusion of masses of extraneous material. The deleted chapter on hospital gangrene was later included in the United States Sanitary Commission's surgical history of the war; see Joseph Jones, "Investigations upon the Nature, Causes, and Treatment of Hospital Gangrene as It Prevailed in the Confederate Armies, 1861-1865," in Frank H. Hamilton (ed.), *Surgical Memoirs of the War of the Rebellion* (2 vols., New York, 1870-1871), II, 143-570; hereafter cited as Jones, "Investigations—Gangrene." The material relating to gangrene has, in the present study, been restored in order to present a complete picture of the prisoners' health problems.

The report began with an exhaustive examination of the medical topography of Andersonville and the surrounding countryside, encompassing geology, soils, waters, flora, fauna, and climate.¹⁶ The only natural health hazard Jones uncovered was an abundance of vermin and insects. The sandy soil provided "a most suitable and healthy habitation" for fleas, and mosquitoes swarmed "in untold myriads," making life at night "all but intolerable by their everlasting buzzing and troublesome bites."¹⁷ Many of the prisoners, Jones noted, "were so stung by these pestiferous insects that they appeared as if they were suffering from a slight attack of measles."¹⁸ Reportedly, this region had not been troubled by fleas and mosquitoes before the establishment of the prison, and Jones postulated that their proliferation might be attributable to "the immense amount of filth generated by the prisoners"¹⁹

But the emphasis was upon salubrity. "No blame," Jones was convinced, "can be attached to the Confederate authorities for the collection of the Federal prisoners at this elevated and healthy locality, which was more salubrious than one half of the territory of South Carolina, Georgia, Alabama, Mississippi, and Louisiana."²⁰ He was especially impressed with the remarkable quality of the waters around Andersonville. For contrast he compared the stream which served as the prisoners' principal water supply and sole sewage system as it entered and exited the stockade. At the former point it was "of great purity"; at the latter it was "loaded with filth and human excrement" and emitted "an intolerable and most sickening stench." "Standing as I did over these waters in the middle of a hot day in September, as they rolled sluggishly forth from the Stockade, after having received the filth and excrements of twenty thousand men," Jones recalled, "the stench was disgusting and overpowering; and if it was surpassed in unpleasantness by any thing, it was only in the disgusting appearance of the filthy, almost stagnant, waters moving slowly between the stumps and roots and fallen trunks of trees and thick branches of reeds, with innumerable long-tailed, large white maggots, swollen pease, and fermenting excrements, and fragments of bread and meat."²¹

¹⁶ Jones, "Investigations—Andersonville," 483-500.

¹⁷ "Between the fleas and the mosquitoes at night," Jones added, "I enjoyed but little sleep during the entire period of my investigations," *ibid.*, 497.

¹⁸ *Ibid.*, 520. Jones complained that throughout his stay at Andersonville his face and hands "appeared as if covered by an eruptive disease," *ibid.*, 497.

¹⁹ *Ibid.*, 498.

²⁰ *Ibid.*, 500.

²¹ *Ibid.*, 494-95.

This sorrowful situation was man's doing, not nature's, a fact which served to bolster Jones's belief that the real reasons for Andersonville's frightful mortality were not to be found in natural factors but in human ones. "As far as my physical and pathological investigations extended," he asserted, "I was compelled to believe that the diseases which proved so fatal to the Federal prisoners confined at Andersonville, Georgia, were due to causes other than those connected with the soil, waters and climate." That the heat "may have promoted the rapid decomposition of the filth which, in violation of all hygienic laws, was allowed to accumulate in the Stockade and hospital grounds . . . and may have proved a cause of debility" was indisputable. "But still," he reiterated, "the fearful mortality could not properly be referred to this condition of climate, or to all the other elements of climate combined."²² The true culprits, Jones suspected, were to be found within the prison walls.

The frequent horrors of war he had witnessed in the armies and hospitals of the South had, Jones thought, steeled him against human suffering, but he was totally unprepared for the sad spectacle which confronted him upon entering the stockade. From wall to wall as far as the eye could see there was a churning sea of sullen, suffering humanity. It took only a cursory perusal to spot the physical sources of this incredible misery; they were everywhere apparent—overcrowding, inadequate shelter, and filth. These things, when coupled with the effects of the prisoners' faulty diet and protracted confinement, made Andersonville's mounting morbidity and mortality more understandable.

Overcrowding and its results were especially noticeable. The Andersonville stockade encompassed seventeen acres when it was opened in February 1864. Four months later it was enlarged by ten acres in order to accommodate the ever-increasing numbers of prisoners sent there. Still, as the following table shows, the burgeoning prison population soon outgrew the expanded facilities and overcrowding became steadily worse. The actual situation, Jones found, was even more distressing than these figures indicated, for much of the land lying along the stream which bisected the stockade "was low and boggy and was covered with the excrements of the men and thus rendered wholly

²² *Ibid.*, 500.

Table 1: Overcrowding at Andersonville²³

Month 1864	Mean Strength Federal Prisoners	Area of Stockade in Sq. Feet	Average Number of Sq. Ft. per Prisoner
March	7,500	740,520	98.7
April	10,000	740,520	74.0
May	15,000	740,520	49.3
June	22,291	740,520	33.2
July	29,030	1,176,120	40.5
August	32,899	1,176,120	35.7

uninhabitable.”²⁴ Consequently, considerable much needed space was lost. Overcrowding forced the prisoners “to perform all the offices of life,—cooking, washing, urinating, defecation, exercise, and sleeping” within the confines of a few square feet.²⁵ The health hazard was obvious.

The lack of adequate shelter was equally noticeable. The prison had been built in a sparsely wooded area and was soon denuded by the prisoners in search of firewood, leaving “no shade-tree . . . in the entire inclosure of the Stockade.” The few “old, torn, and rotten” tents which the prison officials distributed did little to help matters.²⁶ Left to their own ingenuity to protect themselves from the sun, rain, and extremes of the Georgia climate, the prisoners constructed all manner of makeshift shelters. They were monuments to man’s imagination for, as Jones noted, the surface of the stockade, with the exception of the

²³ *Ibid.*, 502. But Jones did not see Andersonville at its very worst, for the prison population had been reduced to 15,000 by the time of his arrival with the removal of half of the prisoners to Millen, Savannah, Charleston and other points “in anticipation of an advance by General Sherman’s forces from Atlanta, with the design of liberating their captive brethren,” *ibid.*, 507.

²⁴ This valuable space was lost, Jones explained, because: “The volume of water was not sufficient to wash away the faeces, and they accumulated in such quantities in the lower portion of the stream as to form a mass of liquid excrement. Heavy rains caused the waters of the stream to rise, and, as the arrangements for the passage of the increased amounts of water out of the Stockade were insufficient, the liquid faeces overflowed the low grounds and covered them several inches, after the subsidence of the waters.” *Ibid.*, 506. At the urging of the medical officers the Confederate authorities tried to recover this much-needed space by covering the quagmire with dry sand, but this stopgap effort was doomed to failure, *ibid.*, 511.

²⁵ *Ibid.*, 502.

²⁶ *Ibid.*, 503.

uninhabitable portion along the stream, was covered with "huts and small, ragged tents, and parts of blankets and fragments of oil-cloth, coats, and blankets stretched upon sticks."²⁷

Unfortunately, Wirz and his lieutenants exercised no supervision over the construction of these hovels. The ensuing hodgepodge arrangement, where there was "scarcely room for two men to walk abreast between the tents and huts," would have threatened a highly organized program of camp and personal hygiene. At Andersonville internal affairs—security and sanitation in particular—were left up to the prisoners. Thus, even basic sanitary procedures were non-existent.²⁸ The result was both disgusting and disastrous. Jones observed men "urinating and evacuating their bowels at the very tent doors and around the little vessels in which they were cooking their food"; small pits "not more than a foot or two deep nearly filled with soft offensive faeces" were found throughout the stockade and "emitted, under a hot sun, a strong and disgusting odor"; and "masses of corn-bread, bones, old rags, and filth of every description" were piled or scattered everywhere.²⁹ Personal hygiene was also shamefully neglected as one of Jones's personal experiences vividly depicted. One night during his stay a heavy rain fell. The next morning while walking down one of the stockade's narrow streets he was startled "at seeing a bold full-length figure of a man upon the smooth, well-beaten street." "There was," he exclaimed, the well-defined nose, open mouth, and flowing beard in strong profile. It looked as if an exact daguerrotype of the man had been taken upon the filthy soil, saturated with urine and the washings of the food. The impression was life-like in all its proportions, and was of a much darker color than the surrounding soil.

"Upon inquiry," he continued,

I found that the dead, as was the usual custom, had been removed out of the tent, and had remained there during the night. The descending rain washed off the filth from the clothes and body, and the carbon deposited from the smoke of the pine wood used in cooking. From each point of the body, and the scant covering of clothing, poured a stream of black filth, which painted the body full-length upon the ground.³⁰

²⁷ *Ibid.*, 507. The makeshift shelters of the prisoners were not limited to the surface of the stockade, for they tunneled extensively, *ibid.*, 502.

²⁸ "Regular streets," Jones added, "appeared to be out of the question in so crowded an area, especially, too, as large bodies of prisoners were from time to time added suddenly without any previous preparation," *ibid.*, 503.

²⁹ *Ibid.*, 507.

³⁰ *Ibid.*, 521-22. "The manner of disposing of the dead was," Jones reported, "calculated to depress the already desponding spirits of these men. . .," *ibid.*, 521. The dead were collected

The prisoners, Jones claimed, appeared to be "utterly callous" to the filth around them, making it "utterly impossible" to impose proper hygienic rules "without the constant presence of a Confederate guard within the stockade."³¹ Despite the absence of such a force, Jones did not hold the South responsible for Andersonville's filth, nor its overcrowding, nor its lack of shelter. To the contrary, he laid the blame on circumstances over which the Confederacy had little or no control. "Sorely pressed on every side," the Southern leaders, he contended, were simply unable to provide for "this large number of prisoners, which they have ever been anxious to exchange, and which [they] . . . believe to be forced upon their hands by the persistent action of the United States Government."³²

No matter where the responsibility lay, conditions at Andersonville were horrifying. Sadly, the treatment of the sick was little better than that accorded the "well." At first all of the sick were treated in the stockade, but in May, three months after the opening of the prison, a hospital was established outside the walls. Two major problems prompted this move: first, the overcrowding in the stockade, where the prisoners' makeshift shelters were "clustered thickly" around the medical facilities, made it impossible "to secure proper ventilation or to maintain the necessary police"; and second, the other prisoners made "frequent forays" upon the hospital stores and stole the food and clothing of the sick. Subsequently patients were divided between the hospital and the stockade; acute cases were treated in the former and less serious ones in the latter.³³

The sick in the prison were housed in several long sheds located in the northern end of the stockade. Originally built as barracks, they were two-story but were open on all sides. Those patients treated here, Jones discovered, "lay upon bare boards, or upon such ragged blankets as they possessed" without, as far as he could tell, any bedding, not

during the day by Negroes and carried to central collecting points. From there, they were carted to the prison cemetery, some quarter of a mile to the northwest of the stockade for burial. The dead were buried without coffins in long, open trenches around four feet in depth. The graves were marked with numbered headboards, and the numbers were recorded in a ledger. But even death did not bring peace. "I observed," Jones remarked, "that innumerable large green flies swarmed over the red earth covering the dead, and in some places they even filled the cracks in the ground," *ibid.*, 507-508.

³¹ *Ibid.*, 511.

³² *Ibid.*, 504. Jones constantly denounced the Union for the decision to end the prisoner exchange, and if his report has a central or recurring theme it is this act as the crux of the Southern problems at Andersonville.

³³ *Ibid.*, 506-507.

even straw.³⁴ Pits designed to serve as latrines had been dug within a few feet of the lower floor but were seldom used because of neglect and the debilitating effects of scurvy, diarrhea, and dysentery.³⁵

Conditions in the hospital were, perhaps, even more distressing. Situated on a five-acre site near the southeastern corner of the prison, it was plagued by all of the stockade's major problems. The water supply, a stream also, had been quickly turned into an "immense cesspool."³⁶ More than 2,000 patients and attendants had been crowded into this confined area with expected results. There was, in fact, such a shortage of space that the sick were forced to pitch their tents to within a few yards of the stream, even that portion used for a privy. Shelter was grossly inadequate. In general the patients were "poorly supplied with old and ragged tents," but Jones reported that some of them had neither protection against the elements nor bunks and "lay upon the ground, oftentimes without even a blanket."³⁷ Sanitary measures were worse, if possible, than they had been in the stockade. Wooden boxes placed along the streets between the tents for the use of those patients who were unable to walk to the privies over the stream were not emptied until completely filled. Time and again Jones saw men he felt sufficiently strong enough to utilize the outdoor facilities urinating at the doors of their tents. Not surprising, he found the air of the tents "foul and disagreeable in the extreme." "In fact," he added, "the entire grounds emitted a most nauseous and disgusting smell."³⁸ The cooking arrangements, which Jones denounced as "miserable and defective," were a further source of filth. "Two large pots, similar to those used for boiling sugar-cane," he revealed, "were the only cooking utensils furnished by the hospital for the cooking of near two thousand men. . . ." Forced to rely in great measure "upon their own miserable utensils," the sick cooked in their tent doors and in the streets.³⁹ The total lack of concern for camp police and sanitation was well illustrated by a large pile of molding cornbread, bones, and all manner of filth,

³⁴ *Ibid.*, 516.

³⁵ *Ibid.*

³⁶ *Ibid.*, 519. The ensuing stench was exacerbated by the stockade, for the marsh into which its stream emptied lay near the hospital, producing "deleterious influences" upon the patients, *ibid.*

³⁷ *Ibid.*, 520.

³⁸ *Ibid.*, 522.

³⁹ *Ibid.* "The food issued to the sick in the hospital," Jones added, "was no great improvement over that issued to the prisoners in the Stockade, and consisted of corn-bread, rice, bacon, and beef, with occasional supplies of green pease, molasses, and vinegar," *ibid.*, 523.

some thirty feet across and several feet high and swarming with "myriads of flies," which dominated a vacant area near the cooking pots. And, if mosquitoes made the patients' lives miserable at night, then flies did the same during the day, for owing to the extreme filth these bothersome insects were everywhere. "Millions of flies," as Jones graphically put it, "swarmed over every thing and covered the faces of the sleeping patients, and crawled down their open mouths and deposited their maggots in the gangrenous wounds of the living and in the mouths of the dead."⁴⁰

That there was an important connection between filth and disease was obvious to Jones, and he found conditions at Andersonville frightening. But he was outraged by the "almost absolute neglect" for the personal hygiene of the sick throughout the prison. To the man, they were "literally incrustated with dirt and covered with vermin." Moreover, it was a frequent sight, Jones asserted, to see dying men brought to the hospital from the stockade "begrimed from head to foot with excrements, and so black from smoke and filth that they resembled negroes rather than white men." Most of this problem was a product of the general low state of hygiene in the prison; some of it grew out of a general lack of concern for the diseased by their fellow prisoners; but far too much of it was attributable to the hospital attendants, usually paroled prisoners, who "neglected the comfort and cleanliness" of the sick "in a most shameful manner."⁴¹

A chronic shortage of medical officers worsened the plight of the sick. The surgeon in charge found it virtually impossible to induce physicians to come to Andersonville. Several important factors were responsible—the absence of necessary facilities, the ensuing unsatisfactory results of practice and distressing nature of the duty, the remoteness of the area, the pressing medical problems in other parts of Georgia created by Sherman's invasion, the scarcity of physicians in the Confederacy, and finally, the nature of the conflict which tended "to excite such prejudices as would disincline medical officers from voluntarily seeking service amongst the captive enemies, who are the representatives of those who are seeking to conquer and desolate their native land." Those that did come frequently became so thoroughly discouraged that they "endeavored to get transfers to other fields of labor, preferring the hardships and exposures of service at the front." Those who braved the obstacles and stayed were often unable to

⁴⁰ *Ibid.*, 520.

⁴¹ *Ibid.*, 523.

perform their duties because overwork and "exhalations from the sick and filth" disabled them. This was especially true of the surgeons serving in the stockade.⁴² To help compensate for the shortage of medical personnel, the surgeon in charge had a number of prisoners paroled or pressed into duty as nurses and attendants. The results of this policy were mixed. The basic idea was sound, but far too often the parolees ignored or mistreated the sick. Jones preferred to view their shortcomings as "the result of carelessness and inattention rather than of malignant design."⁴³

Table II: Consolidated Report of Sick Prisoners at Andersonville, March-August 1864⁴⁴

	March	April	May	June	July	August
Remaining Last Report	—	636	1,022	2,621	4,078	6,412
Cases during Month	1,530	2,425	8,583	7,969	10,624	10,915
Supervening Diseases	—	—	—	—	210	431
Aggregate	1,530	3,061	9,605	10,590	14,912	17,758
Returned to Duty	353	1,463	6,276	5,311	6,548	9,443
Died	283	576	708	1,201	1,952	2,992
Remaining	894	1,022	2,621	4,078	6,412	5,323
Mean Strength	7,500	10,000	15,000	22,291	29,030	32,899
Percentage of Mean Strength						
Taken Sick during Month	20.4	24.3	57.2	35.5	36.6	33.2
Ratio of Sick to Mean Strength. One Sick in Every:	4.9	4.1	1.7	2.8	2.7	3.0
Percentage of Sick That Died during Month	18.5	23.8	8.2	15.1	18.4	27.4
Percentage of Mean Strength That Died during Month	3.8	5.8	4.7	5.4	6.7	9.1
Ratio of Deaths to Mean Strength. One Dead in Every:	26.3	17.2	21.3	18.5	14.9	11.0

⁴² *Ibid.*, 512-13.

⁴³ *Ibid.*, 521. Paroled prisoners were used widely throughout the prison. Several hundred of them served as clerks, carpenters, cooks, and druggists. Moreover, they were charged with the preparation and cooking of food as well as the distribution of rations to the sick and well in the stockade and prison hospital. "These men who had the liberty of the entire post," Jones noted, "were well clothed, and presented a stout, healthy appearance, and as a general rule appeared to be in better circumstances, and to enjoy much more robust health than the Confederate troops guarding the prison," *ibid.*, 518.

⁴⁴ *Ibid.*, 525-29, 531. Jones was not a particularly adept statistician, and his figures contained a number of annoying errors. It is hoped that all of these have been found and corrected.

The magnitude of suffering at Andersonville was staggering. And, as Table II shows, Joseph Jones dutifully depicted it. He warned, however, that these carefully prepared statistics portrayed only part of the picture, for owing "to the insufficiency of medical officers and the extreme illness, and even death, of many prisoners in tents in the Stockade without any medical attention or record beyond the bare number of the dead" they were "far below the truth."⁴⁵ Jones also called attention to the fact that Andersonville's rampaging sickness was not limited to the prisoners; it had seriously undermined the health of the Confederate garrison too. Although statistics, shown in Table III, were available for the Southerners during July and August only, he accepted them as indicative of their general health profile.

Table III: Consolidated Report of Sickness among the Confederate Guards at Andersonville, July-August 1864⁴⁶

	Cases	Deaths	Mean Strength
July	1,258	29	3,881
August	1,236	33	3,629
TOTALS	2,494	62	

The most glaring disparity between these two sets of figures is the catastrophic increase in prisoner mortality. Almost 41,000 Union soldiers, Jones learned, had been sent to Andersonville from the opening of the prison in February 1864 to the time of his visit in September. Of this number, 9,479 (23.3 per cent or 1 in nearly every 4) had died. The death rate had climbed precipitously, rising from 3.8 per cent in March to a perilous 9.1 per cent in August. The Confederate garrison, on the other hand, sustained less than 2 percent fatalities during the two-month period for which statistics were available.⁴⁷ The reasons for the marked difference in mortality, Jones felt, were easily

⁴⁵ *Ibid.*, 530. The U. S. Surgeon General's Office also felt that Jones's figures were too low but made a special effort, however, to attest to his veracity, asserting: "There is no reason to believe that Dr. Jones had the slightest intention to misrepresent the facts. On the contrary, he appears to have been actuated by the most sincere desire to present the whole truth with the utmost fidelity." *The Medical and Surgical History of the War of the Rebellion* (2 vols. in 6, Washington, 1870-1888), vol. 1, pt. 2, 28-29; hereafter cited as *MSH*.

⁴⁶ Jones, "Investigations—Andersonville," 554-62.

⁴⁷ *Ibid.*, 532, 563.

discernible. There were two main ones: first there was the portentous accumulation of "the sources of disease" in the stockade and hospital—"the increase of excrements and filth of all kinds," "the concentration of noxious effluvia," and "the progressive effects of the bad diet, crowding, and hot climate"; the second reason, "homesickness and the disappointment, mental depression, and distress attending the daily longings for an apparently hopeless release," was, he asserted, "as potent . . . in the destruction of these prisoners as the physical causes of actual disease."⁴⁸

For the sake of discussion, Jones divided the diseases found at Andersonville into three categories according to alleged origin—those produced by climatic changes and exposure, those caused by a specific poison, and those attributed to protracted confinement and poor diet. The chief climatic disorder was thought to be malaria. The incursions of this great Southern endemic at Andersonville presented a curious anomaly. "The march of malarial fever amongst these Federal prisoners," Jones discovered, "did not conform to the almost universal law of the progressive increase of these diseases during the months of May, June, July, August, and September in the Southern States."⁴⁹ Indeed, as Table IV shows, after a high of 1,162 cases in May the incidence of malaria decreased sharply during subsequent months. A similar contradiction did not occur among the Confederate guards who sustained almost 600 cases during July and August. In fact, findings from his

Table IV: Effect of Malaria on the Prisoners at Andersonville, March-August 1864⁵⁰

	Cases	Deaths
March	72	7
April	49	5
May	1,162	19
June	662	22
July	506	24
August	515	42
TOTALS	2,966	119

⁴⁸ *Ibid.*, 532.

⁴⁹ *Ibid.*, 568.

⁵⁰ *Ibid.*, 567.

extensive wartime research showed that malaria prevailed to a far greater extent among Southern soldiers serving in all sections of the South than it did among the Union prisoners at Andersonville. Jones was puzzled, for the reverse should have been the case since these prisoners were held captive in "a hot, and to a certain extent, malarious climate," and were "to a great extent unaccustomed to either the extreme heat, or the malaria of the swamps" while the Confederate troops "were natives of the soil" and had, in many cases, been "subjected to these influences from birth." Unable to unravel this mystery, he conjectured: "We can only account for the comparative immunity of the Federal prisoners on the supposition that the artificial atmosphere created by the immense accumulations of filth and human excrements within and around the Stockade and Hospital counteracted or destroyed in some unknown manner the malarial poison."⁵¹

Exposure related diseases, attributed to continuous imprisonment without proper clothing or shelter, included pneumonia, pleurisy, bronchitis, catarrh, laryngitis, tonsillitis, and rheumatism. The ratio of these disorders to the total number of cases steadily diminished as the weather became warmer, declining from 24.3 per cent in March to 11.1 per cent in August. Deaths from them followed a similar pattern, falling from 32.8 per cent to 2.3 per cent during the same period. Of these diseases, pneumonia was the most important. This very lethal inflammation of the lungs attacked only 2.5 per cent (528 cases) of the prison's mean strength but almost 50 per cent of those affected died.⁵²

Specific poisons produced by the crowding and the "foul exhalations" of the prison were thought to cause typhus, typhoid fever, smallpox, and measles. As Table V reveals, the incidence of these disorders varied greatly. Jones quickly dispensed with typhus. He had heretofore searched diligently for this scourge of European armies without success, uncovering only a few misdiagnosed cases of typhoid fever. But he had not visited Andersonville where conditions for its presence seemed ideal, so ideal, in fact, that Jones asserted: "I supposed that if typhus fever existed anywhere in the Confederate States it would be found at Andersonville, and especially amongst the foreign element of the Federal armies, which had been but recently imported

⁵¹ *Ibid.*, 564.

⁵² *Ibid.*, 582-95. Jones did not comment on exposure related diseases among the Andersonville garrison, but he did draw heavily on his wartime research to show that these conditions, especially pneumonia, "prevailed to as great an extent amongst the Confederate troops as amongst the Federal prisoners," *ibid.*, 594.

Table V: Effect of Diseases Caused by Specific Poisons on the Prisoners at Andersonville, March-August 1864⁵³

	Typhus		Typhoid Fever		Smallpox		Measles	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
March	0	0	67	28	28	5	10	0
April	0	0	56	18	73	34	6	1
May	0	0	92	17	13	10	40	3
June	0	0	18	32	1	10	8	2
July	0	0	39	58	4	8	3	0
August	0	0	200	32	0	1	1	1
TOTALS	0	0	472	185	119	68	68	7

from the bogs of Ireland, and from the hovels of the densely populated European countries." His careful search yielded no trace of typhus, convincing him that it was not to be found in the Southern armies, hospitals, and military prisons.⁵⁴

The incidence of typhoid fever at Andersonville was surprisingly low. It accounted for slightly more than one per cent of the total number of cases treated. Moreover, the ratio of typhoid cases to mean strength was nearly three times as great among the Confederate guards as it was among the prisoners—1 in 37 as opposed to 1 in 86. Jones had a ready explanation for this disparity, pointing out that these Southern soldiers were mainly reserves who had been recently inducted and had not yet "passed through the diseases of the camp" while most of the prisoners had been held captive for as long as two years and those who had not had this fever previously either contracted it during their confinement or else "long exposure" had made them immune.⁵⁵

The occurrence of smallpox was also slight, a fact Jones attributed to the foresight of the Confederate medical officers who acted quickly to halt its spread through mass vaccination. Tragically, "untoward results" followed in a number of cases. Large, unsightly gangrenous-like ulcers appeared at the points of vaccination, "causing extensive destruction of the tissues, and necessitating amputation in more than one instance."⁵⁶ These aberrations led to the widespread belief among the prisoners that the physicians "had intentionally introduced poisonous matter into

⁵³ *Ibid.*, 601.

⁵⁴ *Ibid.*, 600-601.

⁵⁵ *Ibid.*, 563-64.

⁵⁶ *Ibid.*, 614-15.

their arms"—a charge extensively aired at the Wirz trial.⁵⁷ Jones denounced this allegation, labelling it "as malicious as it was false." He freely confessed that in every collection of men it was possible to find "some unprincipled individual" and that the Confederate medical officers at Andersonville probably represented no exception "to the general frailties of mankind." "...but this I do know by personal observation," he asserted, "that they deplored the distressing fate of these unfortunate victims . . . and earnestly desired to do their duty in the cause of suffering humanity."⁵⁸

Spurious vaccination, as the secondary infections arising from vaccination were called, was no stranger to Jones; he had seen numerous cases in the Confederate armies and hospitals. In fact, this phenomenon had become so widespread by 1864 that Moore ordered the Southern surgeons to make it the subject of a special investigation. Jones's research unveiled a variety of causative factors—a scorbutic condition of the blood; the use of vaccine matter from subjects who had been only partially protected or who were suffering from erysipelas or secondary syphilis; and the use of vaccine matter which, owing to the effects of the warm, humid Southern climate, had started to decompose.⁵⁹ Applying these findings to spurious vaccination among the Andersonville prisoners, Jones concluded: "These accidents were . . . referable in a great measure, if not wholly, to the scorbutic condition of their blood and to the crowded condition of the Stockade and Hospital." In support of this contention he called attention to the increased incidence of gangrene at Andersonville. Its prevalence, he maintained, was concrete proof that the blood of the prisoners was in such a scorbutic state that similar infections "would most probably have attacked any puncture made by a lancet without any vaccine matter or any other extraneous material."⁶⁰

⁵⁷ *Ibid.*, 615. For the vaccination controversy at the Wirz trial, see *Trial of Henry Wirz*, 45-46, 149, 156-57, 160-61, 167, 178, 188, 192, 217, 295-96, 317, 346-47, 370, 390, 399, 409, 451-52, 472-73, 521, 542, 563, 610, 613-14, 663, 675.

⁵⁸ Jones, "Investigations—Andersonville," 654.

⁵⁹ *Ibid.*, 616-18. Jones's findings on spurious vaccination in the Confederate armies were embodied in two articles after the war; see Joseph Jones, "Spurious vaccination," *Southern Med. & Surg. J.*, ser. 3, July 1866, 21. 165-80; a later and much more extensive study is Joseph Jones, "Researches on 'spurious vaccination,' or the abnormal phenomena accompanying and following vaccination in the Confederate Army, during the recent American Civil War, 1861-1865," *Nashville J. Med. & Surg.*, n.s., Jan., Feb., and March 1867, 2: 1-31, 81-120, 161-221.

⁶⁰ Jones, "Investigations—Andersonville," 615. The "foul ulcers" and gangrene which followed the "slightest injuries" prevented Jones from drawing blood from the prisoners for use

Scurvy, diarrhea, dysentery, and hospital gangrene, Jones learned, were the diseases responsible for "the extraordinary mortality of Andersonville."⁶¹ He attributed them to protracted confinement and poor diet. Dietetic disorders—scurvy, anasarca, ascites, marasma, and debility—were commonplace. Of these, scurvy was not only the most prevalent but was also the most dangerous, for according to Jones a scorbutic condition "modified the course of every disease, poisoned every wound, however slight, and lay at the foundation of those obstinate and exhausting diarrhoeas and dysenteries which swept off thousands of these unfortunate men."⁶² "The effects of scurvy," he remarked,

were manifest on every hand, and in all its various stages, from the muddy pale complexion, pale gums, feeble, languid, muscular motions, lowness of spirits, and fetid breath; to the dusky, dirty, leaden complexion, swollen features, spongy, purple, livid, fungoid, bleeding gums, loose teeth, oedematous limbs, covered with livid vibices and petechiae, spasmodically flexed, painful and hardened extremities, spontaneous hemorrhages from mucous canals, and large, ill-conditioned spreading ulcers covered with a dark purplish fungous growth.⁶³

Pointing to the "remarkable healthy and strong appearance of the paroled prisoners, who were allowed an extra ration, and who were able to supply themselves with whatever vegetables the country afforded by

Table VI: Effect of Scurvy on the Prisoners at Andersonville, March-August 1864⁶⁴

	Cases	Deaths
March	15	0
April	50	0
May	1,221	14
June	2,097	68
July	3,092	195
August	3,026	722
TOTALS	9,501	999

in his scientific experiments. "I did not feel justified," he explained, "in subjecting these prisoners of war to the inconveniences and dangers of blood-letting for purely scientific purposes," *ibid.*, 621-22.

⁶¹ Jones, "Investigations—Gangrene," 523.

⁶² Jones, "Investigations—Andersonville," 644.

⁶³ *Ibid.*, 514.

⁶⁴ *Ibid.*, 620.

the sums of money which they made in trade with their fellow-prisoners and the Confederate soldiers," Jones correctly attributed the great prevalence of scurvy, shown in Table VI, to the character rather than the quantity of the food or, as he put it, "the effects of salt meat and of farinaceous food without fresh vegetables."⁶⁵ The Andersonville prisoners, Jones claimed, "received the same ration in kind, quality, and amount issued to the Confederate soldiers in the field."⁶⁶ Such fare was insufficient to ward off scurvy. "As far as my experience extended," he contended, "no body of troops could be confined exclusively to the Confederate ration without suffering materially in their health, and without manifesting symptoms of the scurvy."⁶⁷ A marked increase in the incidence of this disorder in the Southern armies late in the war supported Jones's contention. Had it not been for an "immense amount of extra supplies" furnished by friends, relatives, state agencies, and benevolent societies and obtained through foraging, the Confederate soldiers would have been stricken by the severe and fatal forms of scurvy which preyed upon the prisoners.⁶⁸

Diarrhea and dysentery, as Table VII shows, were the most persistent

Table VII: Effect of Diarrhea and Dysentery on the Prisoners at Andersonville, March-August 1864⁶⁹

	Diarrhea		Dysentery	
	Cases	Deaths	Cases	Deaths
March	481	77	185	41
April	1,149	335	184	76
May	2,337	422	1,277	101
June	2,476	777	811	103
July	3,145	847	1,179	242
August	2,502	1,072	1,046	436
TOTALS	12,090	3,530	4,682	999

⁶⁵ *Ibid.*, 622.

⁶⁶ *Ibid.*, 644.

⁶⁷ *Ibid.*, 645.

⁶⁸ *Ibid.*, 625-26. As bad as the ravages of scurvy were at Andersonville, Jones believed that the situation could have been far worse had it not been for the "efforts made by the medical staff and by the officers in charge of the commissary department to furnish the prisoners with such vegetables as could under the circumstances be commanded in a sparsely settled country," *ibid.*, 627.

⁶⁹ *Ibid.*, 628.

causes of disability and death at Andersonville. It is difficult indeed to overestimate their impact for, as Jones observed, "almost every prisoner was afflicted with either diarrhoea or dysentery."⁷⁰ He offered a variety of reasons for the "great prevalence of bowel affections." These included the adverse effects of exposure, inadequate shelter, and accumulations of dust, smoke, and filth on the functioning of the body and skin; the noxious odors of the stockade; scurvy and its sequelae; improperly cooked food; and a prolonged diet of salt meat and coarse, unbolted cornbread.⁷¹

Jones placed especial emphasis on the role of the prisoners' inadequate diet. In general they had been reared on wheat bread and Irish potatoes. Indian corn, a mainstay of the Southern diet, was unknown to them prior to their capture. The prisoners found it "disagreeable and distasteful," and Jones was sympathetic. He insisted that Southern cornbread was "one of the most wholesome and nutritious forms of food, as has been clearly shown by the health and rapid increase of the Southern population, and especially of the Negroes, previous to the present war, and by the strength, endurance, and activity of the Confederate soldiers" but at the same time admitted that "it is nevertheless true that those who have not been reared upon corn-meal, or who have not accustomed themselves to its use gradually, become excessively tired of this kind of diet when suddenly confined to it without a due proportion of wheat bread."⁷² A scarcity of sieves in the Confederacy further complicated matters as the prisoners were forced not only to eat cornbread but cornbread prepared from meal from which the husk had not been removed. The husk of the Indian corn seemed to produce "a decided irritant effect" on their intestinal

⁷⁰ *Ibid.*, 627. "Amidst the immense mass of human excrement in both localities [stockade and hospital]," Jones pointed out, "I did not see a single moulded stool." *Ibid.*, 629. Yet, according to the compilers of *MSH* he underestimated the prevalence of bowel disorders at Andersonville. *MSH*, vol. I, pt. 2, 34.

⁷¹ Jones, "Investigations—Andersonville," 628. The pores of the skin, he noted, appeared to be completely stopped up and the skin itself resembled "more nearly parchment and sand-paper," *ibid.*

⁷² *Ibid.*, 647. Members of the United States Sanitary Commission who visited Andersonville at the close of the war supported Jones's claim as to the edibility of Southern cornbread. Observing huge piles of it decaying in the stockade and prison, they attributed any starvation among the prisoners to a peculiarity of the Northern appetite "since it is well known that Southern soldiers and negroes thrive on such fare." Quoted in Byron Stimson, "Scurvy in the Civil War—a medical report," *Civil War Times Illustrated*, Aug. 1966, 5. 23. Stimson added, however, that while this diet might have prevented starvation it did nothing to ward off scurvy, for cornbread is totally deficient in vitamin C, *ibid.*

canals. Soon, as might be expected, "immense piles" of decaying cornbread were found throughout the stockade and hospital.⁷³ Those prisoners who became "so disgusted with this form of food that they have no appetite to partake of it" were quickly reduced to "the condition of men slowly starving." "In this state," Jones observed, "the muscular strength was rapidly diminished, the tissues wasted, and the thin, skeleton-like forms moved about with the appearance of utter exhaustion and dejection." "In many cases," he continued,

even of the greatest apparent suffering and distress, instead of showing any anxiety to communicate the causes of their distress, or to relate their privations and their longings for their homes and their friends and relatives, they lay in a listless, lethargic, uncomplaining state, taking no notice either of their own distressed condition or the gigantic mass of human misery by which they were surrounded.

"Nothing," he exclaimed, "appalled and depressed me so much as this silent, uncomplaining misery."⁷⁴ That diarrhea and dysentery ensued is not surprising.

The therapeutic measures taken to combat these disorders were inadequate at best. Jones dismissed them as of "little or no beneficial effect."⁷⁵ Admittedly, opium "allayed pain and checked the bowels temporarily," but this "frail dam was soon swept away" and the hapless victim "appeared to be but little better, if not the worse, for this merely palliative treatment." "The root of the difficulty," Jones asserted, "could not be reached by drugs; nothing short of the wanting elements of nutrition would have tended in any manner to restore the tone of the digestive system. . . ." "My opinion to this effect," he added, "was expressed most decidedly to the medical officers in charge of these unfortunate men."⁷⁶

Gangrene was Jones's pet research project at the time of his visit to Andersonville, guaranteeing it special attention. The authentic origin of

⁷³ Jones, "Investigations—Andersonville," 629.

⁷⁴ *Ibid.*, 647-48.

⁷⁵ *Ibid.*, 629.

⁷⁶ Jones again pointed to the "robust condition" of the paroled prisoners to support the "correctness" of his view. Jones was appalled but not totally surprised by the large number of cases of diarrhea and dysentery at Andersonville. "At all times," he asserted, these conditions had proved "severe scourges of fleets in active service, and of armies in the field, and of crowded filthy prisons with their depressed and poorly-fed inmates, and of beleaguered forts and cities." He based this assertion on historical evidence and the results of his research in the Confederate armies. Incomplete returns for the first two years of the war, for example, showed that bowel disorders had hospitalized over a million and a quarter Southern soldiers (1,296,244) and had caused 35,679 deaths, *ibid.*, 634-41.

this unsightly, much-feared killer was unknown to Civil War physicians. But Jones had no trouble explaining its appearance among these prisoners; the reasons were all too apparent. As he saw it:

More than *thirty thousand* men crowded upon *twenty-seven* acres of land, with little or no shelter from the intense heat of a southern summer, or from the rain and dew; with coarse corn bread, from which the husk had not been removed; with scant supplies of fresh meat and vegetables; with little or no attention to hygiene; with festering masses of filth at the very doors of their rude dens and huts; with the greater portion of the banks of the stream flowing through the stockade a filthy quagmire of human excrements alive with working maggots, generated by their own filthy exhalations and excretions an atmosphere that so deteriorated and contaminated their solids and fluids that the slightest scratch of the surface, even the bites of small insects, were frequently followed by such rapid and extensive gangrene, as to destroy extremities, and even life itself.⁷⁷

The poisonous air of the prison was so virulent, he asserted, that its harmful effects extended "to a considerable distance outside" and was responsible for several cases of gangrene among the guards who had not entered the stockade but had only occupied the sentry boxes along its top.⁷⁸

"The almost total absence of records" and "the imperfect organization of the hospital" prevented Jones from compiling accurate statistics on the incidence and mortality of gangrene at Andersonville.⁷⁹ Available figures, which he viewed as "far below the truth," showed 267 cases and 25 deaths. Of these cases, 102 were listed as supervening upon gunshot wounds, 12 followed vaccination, and the remainder attributed to a "scorbutic and deranged condition of the system." Only 67 amputations for gangrene were recorded. Jones also dismissed this figure as too low, remarking: "After careful inquiry, and personal examinations of the wards and patients, I was convinced that the number of amputations for hospital gangrene reached, and perhaps exceeded, one hundred."⁸⁰ Tragically, "the depressed condition of the prisoners" and "the foul atmosphere of the military prison hospital" reduced amputation to a worthless procedure as the infection "almost invariably returned." "Almost every amputation," Jones bemoaned,

⁷⁷ Joseph Jones to Samuel P. Moore, October 19, 1864, in Manigault, "Journal."

⁷⁸ Jones, "Investigations—Gangrene," 532-33.

⁷⁹ *Ibid.*, 521. The paucity of statistics was due in large measure to the fact that gangrene did not appear on the Southern list of diseases until July 1864; it never appeared on the Union one.

⁸⁰ *Ibid.*, 521-22.

"was followed finally by death, either from the effects of gangrene or from the prevailing diarrhoea and dysentery."⁸¹

Conditions in the prison hospital insured that the fight the harried surgeons were waging against gangrene was to be a losing one: the uncontrolled filth and crowding made it impossible to protect the injured against infection; when a gangrenous wound needed cleaning "the limb was thrust out a little from the blanket or board or rags upon which the patient was lying, and water poured over it, and all the putrescent matter allowed to soak into the ground floor of the tent;" flies swarmed over wounds; the supply of rags for dressings was pitifully inadequate, and "the most filthy rags, which had been applied several times and imperfectly washed," were used in dressing recent wounds; and sponges and washbowls were also scarce—"the same wash-bowl and sponge serving for a score or more of patients." There was, therefore, "such constant circulation of the gangrenous matter" that the infection "might rapidly be propagated from a single gangrenous wound."⁸²

Joseph Jones empathized wholeheartedly with the prisoners in their desperate struggle against disease and death. "In truth," he lamented,

these men at Andersonville were in the condition of a crew at sea, confined upon a foul ship upon salt meat and unvarying food, and without fresh vegetables. Not only so, but these unfortunate prisoners were like men forcibly confined and crowded upon a ship tossed about on a stormy ocean, without a rudder, without a compass, without a guiding star, and without any apparent boundary or end to their voyage; and they reflected, in their steadily increased miseries, the distressed condition and waning fortunes of a devastated and bleeding country which was compelled, in justice to her own unfortunate sons, to hold these men in this most distressing captivity.⁸³

Despite the South's "waning fortunes," Jones warned against overt malice toward these helpless victims of the war, asserting: "Whilst the Yankees have no claim upon our sympathies & upon our charities, still if prisoners are to be sacrificed let the black flag be raised."⁸⁴ He

⁸¹ *Ibid.*, 522-23.

⁸² Jones, "Investigations—Andersonville," 520, 653. Jones was also aware of a connection between flies and the spread of gangrene, pointing out: "The numerous flies which swarmed around and over every ulcer, without doubt formed efficient agents for the spread of hospital gangrene," *ibid.*, 520.

⁸³ *Ibid.*, 649.

⁸⁴ Jones was further convinced that "the fear of great suffering in imprisonment only renders our enemies more vindictive & more stubborn in battle." Joseph Jones to Mary Jones, September 22, 1864, JJ-TU; Joseph Jones, "Andersonville Diary," JJ-LSU. Jones also planned to extend his investigations to the other Southern prisoners. Jones, "Investigations—Andersonville," 479.

hoped, therefore, that his findings here would provide "the means of mitigating" some of the misery and, "with a sincere appreciation of the great difficulties of the situation," presented for the consideration of the Surgeon General those changes which he believed "essential to the relief of these suffering prisoners." There were five of them—an increase of the available area for each prisoner by at least fivefold and the establishment of an effective system of hygiene enforced by "a regularly appointed and accountable guard," the construction of suitable barracks and hospital buildings, an enlargement of the medical staff and the appointment of one or more chaplains, the detailing of disabled Confederate soldiers as nurses, wardmasters, and pharmacists, and the liberal issuing of fresh fruit and vegetables and milk to combat scurvy.⁸⁵

Jones was also painfully aware of the limitations of the Confederacy late in the war. Much that needed to be done for the relief of the Andersonville prisoners simply could not be carried out. He was, without doubt, overly apologetic for the South, but he expressed the Southern dilemma in a very convincing manner, writing:

As long as the Confederate government is compelled to hold these prisoners as hostages for the safe return and exchange of the captive men of its own armies, it is difficult to devise efficient measures for the mitigation of much of the suffering of such an immense army of prisoners (equal at least to one fourth of the Confederate forces actively engaged in the field, east of the Mississippi), in a purely agricultural and sparsely settled country, with imperfect lines of communication, with but few manufactories, without commerce, cut off from all communication with the surrounding world, deprived of even the necessary medicines which have been declared by its enemies "contraband of war," with torn and bleeding borders, with progressively diminishing powers of subsistence and resistance, with its entire fighting population in arms, and yet being steadily driven back and overpowered by the hosts of the enemy, with a constant driving in of the population from the constantly contracting borders upon the overcrowded and distressed centre, and with a corresponding increase of travel upon the delapidated railroads, already taxed far beyond their capacity with the transportation of troops, the munitions of war, and the sick and wounded.

"In Georgia, especially," he continued,

the very State in which these prisoners are confined, is the pressure of the Confederate disasters felt with daily increased force. The disastrous campaign in Northern Georgia has been attended with the desolation of the fairest portions of

⁸⁵ Jones, "Investigations—Andersonville," 534-35. Jones drew heavily on the observations and recommendations of surgeons Isaiah H. White and R. R. Stevenson and included their reports in his manuscript, *ibid.*, 535-52.

the State. Thousands of families from the devastated regions, and from all the towns and villages from Chattanooga to Atlanta and beyond, have fled to the regions considered more safe from invasion, and are occupying old cars, depots, sheds, and tents along the entire railroad system of Georgia. Thousands of old men, delicate women, and defenseless children, have not only lost all their earthly possessions, but are without a roof to cover their heads, and are dependent for their daily bread upon the charities of the State government. The hospitals attached to the army of Tennessee are in a constant state of motion, and the poorly fed and imperfectly treated wounded are suffering with the worst forms of hospital gangrene and pyaemia. Every available building, including churches and colleges and school-houses, suitable for hospital purposes, in all towns and villages, are crowded with the sick and wounded, and Georgia may with truth be said to be one vast hospital.⁸⁶

Jones was in earnest when he insisted that the horrors of Andersonville were attributable to the Union's summary suspension of prisoner exchange and the Confederacy's subsequent inability to provide for an ever-increasing number of captives as it tottered on the brink of collapse. Thus, it would be unfair to dismiss his work as a mere whitewashing of the South. To do so would be to lose sight of its considerable value, for Joseph Jones has provided historians with the most complete account of the hell that was Andersonville. Nor should it be forgotten that he was sincerely grief-stricken at the plight of these prisoners and did everything in his power as a research scientist to improve their wretched lot. In fact, he became so emotionally involved that he was never able to forget Andersonville; it was indelibly etched upon his mind. As long as Jones lived he would remember:

The haggard, distressed countenance of these miserable, complaining, dejected living skeletons crying for medicine and food, and cursing their government for its brutality in refusing to exchange prisoners, and the ghastly corpses with their glazed eyeballs, staring up into vacant space, with the flies swarming down their open and grinning mouths, and amongst the sick and dying, formed a picture of helpless, hopeless misery which it would be impossible to portray by words or by the brush.⁸⁷

⁸⁶ *Ibid.*, 533-34. Robert E. Lee expressed a similar view, although far less emotionally, in a letter to Jones after the war. "I believe," he wrote, "every one who has investigated the afflictions of the Federal prisoners is of the opinion that they were incident to their condition as prisoners of war, and to the distressed state of the whole Southern country. . . ." Robert E. Lee to Joseph Jones, April 15, 1867, in Jones, "The treatment of prisoners," 178. Jones's report ended with fourteen general conclusions, but they have been incorporated in the text of this study and to list them would be repetition; see Jones, "Investigations—Andersonville," 642-55.

⁸⁷ Jones, "Investigations—Andersonville," 516.

MARIJUANA IN ANCIENT GREECE AND ROME? THE LITERARY EVIDENCE

THEODORE F. BRUNNER

In recent years, a growing preoccupation with hallucinogenic drugs and their scientific, sociological, and legal implications has resulted in numerous publications on the nature and history of drugs. Marijuana, in particular, is now under close scrutiny by both opponents and proponents of its legalization, and many of the latter—in an attempt to prove that marijuana has been acceptable in all cultures throughout the ages—issue categorical statements regarding its use in virtually all geographical locations and historical periods.¹ It is, therefore, not surprising that we encounter the frequent assertion that in ancient Greece and Rome the marijuana plant was not only known, but also utilized for its hallucinogenic properties. Since modern writers on the historical aspects of marijuana use appear not to have investigated the Greek and Roman authors on cannabis thoroughly,² this article—without attempting to enter into the pros and cons of potential legalization of the plant—proposes to present a collation and discussion of the pertinent sources from Greek and Roman literature.

At the outset, a brief definition of the subject of this paper is in order: The Greek and Latin terms *κάνναβις* and *cannabis*³ designate the hemp-plant, catalogued by Linnaeus in 1753 as *Cannabis sativa*. Varieties of the plant, which is a member of the Moraceae or Mulberry family, are found in both hemispheres, and terms such as *cannabis indica* and *cannabis americana* suggest their geographic provenance. In the English language, the most commonly accepted term is marijuana

¹ E.g. Pascal Brotteaux, "The Ancient Greeks," in *The Book of Grass*, edited by George Andrews, (New York: Grove Press, 1967), pp. 10 f.; Mircea Eliade, "Ancient Scythia and Iran," *op. cit.* (pp. 11 ff.); W. Reininger, "Remnants from Prehistoric Times," *op. cit.* (pp. 14 f.)

² The only classical Greek passage which is cited consistently in various historical treatments of marijuana is Herodotus 4.73 ff.; cf. Richard H. Blum and Associates, *Society and Drugs*, Vol. 1, (San Francisco: Jossey-Bass, 1969), p. 62; Reininger, *op. cit.*, p. 14.

³ The Greek term appears in various forms: *κάνναβις* and *κάνναβος* (both f.) are found in the nominative, *καννάβιος* and *καννάβειος* in the genitive, and *κάνναβω* and *κανναβίδα* in the accusative. *κάνναβος*, hemp, should not be confused with *κάνναβος*, wooden frame, skeleton; cf. Aristotle, *Historia animalium* 515^a35. The Latin term for the plant is *cannabis* (f.), although the nominative *cannabum* is found in Isidore (*Orig.* 19 27.3).

(or marihuana),⁴ perhaps a mutilation of Portuguese *maran guango*, meaning "intoxication." The active hallucinogenic principle of the plant, tetrahydrocannabinol, produces both physiological and psychological effects, among them dizziness, loss of bodily coordination, heaviness in the extremities, craving for food (particularly sweets), increase in the rate of heartbeat, disorientation of thought patterns, disturbance of memory, distortion in temporal and spatial perception, increased sociability, as well as a general sense of euphoria and relaxation.⁵ The concentration of tetrahydrocannabinol varies in different parts of the plant: the pure resinous exudate of the mature female plant, called hashish, has the highest hallucinogenic properties; female plant tops and leaves provide an intermediate pharmacological yield; while stems and seeds, together with male plants, are considered of little or no toxic value by the average marijuana user. Marijuana resin and leaves, when dried, may be either ingested or smoked for their hallucinogenic effects. The stems of the male plant are fibrous and were—until the introduction of synthetic fiber materials—of considerable import in the production of rope and textile materials. Before the development of synthetic medications, preparations of cannabis were widely used throughout the world as analgesics and hypnotics, particularly in the treatment of migraine headaches, discomforts resulting from colds, rheumatism, and menstrual pain, and the drug was listed in the *U.S. Pharmacopoeia* until 1937, when possession, sale, and use of all parts of the cannabis plant (exclusive of mature stalks, stalk fibers, and processed or sterilized seeds) were declared illegal by Congressional action (Public Law No. 238 of August 2, 1937, commonly known as the Marihuana Tax Act).

While modern science is quite well acquainted with *Cannabis sativa*, its properties and its functions, ancient writers show a considerable degree of ignorance on the subject. The first reference to the plant appears in Herodotus, Book 4.73ff.: we read that the Scythians, after conducting funerals, build tents by setting up three poles and covering them with woolen mats; in the center of the tent a pit is dug and filled

⁴ For the sake of consistency, the term marijuana, when used in this article, will always refer to the dried, shredded, and cleaned tops and leaves of the female plant of *Cannabis sativa*, i.e. to the product as it is most commonly consumed today by users.

⁵ For a comprehensive study of the sociological, medical, psychological, and pharmacological aspects of marijuana use, cf. the Report of the New York Academy of Medicine, *Mayor's Committee on Marihuana, New York City* (Lancaster, Pa., 1944). Portions of this report are reprinted in *The Marihuana Papers*, ed. by David Solomon, (New York: New American Library, 1968), pp. 277-410.



with red-hot stones; then, after crawling into the tent, the Scythians "throw the seed (i.e. of the hemp-plant) upon the red-hot stones."⁶ The smoldering seeds create a vapor, and "the Scythians, delighted, shout for joy."⁷ Although Herodotus explains this practice in terms of purification,⁸ the passage seems to suggest a primitive attempt to exploit the toxic properties of cannabis.⁹ The seeds employed are clearly those of marijuana, since Herodotus, in addition to explicitly using the term *κάνναβις*, also gives a detailed description of the plant in 4.74:

Hemp grows in Scythia: it is very like flax; only that it is a much coarser and taller plant: some grows wild about the country, some is produced by cultivation: the Thracians make garments of it which closely resemble linen; so much so, indeed, that if a person has never seen hemp he is sure to think they are linen, and if he has, unless he is very experienced in such matters, he will not know of which material they are.¹⁰

The circumstances surrounding the use of the seeds, i.e. the occasion of a funeral, seem to suggest that the vapors were meant to produce euphoria among the mourners, and instances of alcohol intoxication at funerals are a wide-spread and well-known phenomenon among many nationalities and ethnic groups even today.¹¹ The reference to "shouting for joy" in 4.75 leaves little doubt that the inhibition-reducing effect of cannabis left its mark on the Scythians.¹² If the

⁶ ἐπιβάλλουσι τὸ σπέρμα ἐπὶ τοὺς διαφανέας λίθους τῷ πυρί (4.75).

⁷ οἱ . . . Σκύθαι ἀγάμενοι τῇ πυρὶ ὥρῳονται (*ibid.*).

⁸ τοῦτ' ὅρι ἂντι λουτροῦ ἐστὶ. οὐ γὰρ δὴ λούονται ὕδατι τὸ παράπαν τὸ σῶμα, "this serves them instead of a water-bath; for they never ever wash their bodies with water" (*ibid.*).

⁹ The lexicographer, Hesychius, who bases his *κάνναβις* entry on Herodotus, does not know cannabis as an intoxicant; his lexicon entry under *κάνναβις* describes the plant as raw-material for clothing and as a dehydrating agent.

¹⁰ Ἔστι δέ οῖσι *κάνναβις* φύομένη ἐν τῇ χώρῃ πλὴν παχύτητος καὶ μεγάλους τῷ λῶνι ἐμπερεστάτη. ταύτῃ δὲ πολλῶν ὑπερφέρει ἡ *κάνναβις*. αὕτη καὶ αἰθομάτη καὶ σπειρομένη φύεται, καὶ ἐξ αὐτῆς Θρήικες μὲν καὶ εἴματα ποιεῦνται τοῖσι λυέοιςι ὁμοιότατα. οὐδ' ἂν, ὅστις μὴ κάρτα τριβῶν εἴη αὐτῆς, διαγνοίη λῶνι ἢ καννάβιος ἐστὶ. ὅς δὲ μὴ εἶδ' ἐκὼ τὴν κανναβίδα, λῶνον δοκῇσει εἶναι τὸ εἶμα.

¹¹ E.g. the Irish wake, which is known for alcohol consumption of proverbial proportions.

¹² Some editors seem unnecessarily hesitant to connect *κάνναβις* with intoxication: Rawlinson feels that "Herodotus appears in this instance to have confounded together two things in reality quite distinct, viz. intoxication from the fumes of hemp-seed [or hashish], and indulgence in the vapour-bath" (*The History of Herodotus*, translated by G. Rawlinson [London, 1858-60], vol. 3, p. 64, n. 6. In their commentary, How and Wells, although less cautious, nevertheless place a twofold interpretation on the passage: "they 'howl' with delight, but also from intoxication by the hemp fumes" (W. W. How and J. Wells, *A Commentary on Herodotus* [Oxford: Clarendon Press, 1912], vol. 1, p. 329).

passage raises a problem, it is the fact that *spermata*, "seeds," are used instead of cannabis leaves or whole plants.¹³ generally, the modern marijuana smoker considers the seeds of the plant at best ineffectual, at worst a nuisance.¹⁴ However, this modern disregard for the seeds may well be unjustified, since both seeds and stems of the plant, when boiled and ingested in the form of "tea," are reported to have produced satisfactory "highs." Furthermore, scientific research on seeds seems to suggest that cannabis seeds do in fact contain toxic properties.¹⁵

While the Scythian custom clearly seems to feature the use of marijuana as an intoxicant, a similar passage in Herodotus (Book 1.202) is less explicit. Discussing the inhabitants of islands in the Araxes river he reports:

The men who inhabit them feed during the summer on roots of all kinds, which they dig out of the ground, while they store up the fruits, which they gather from the trees at the fitting season, to serve them as food in the wintertime. Besides the trees (*dendrea*) whose fruit they gather for this purpose, they have also a tree which bears the strangest produce (*karpous*). When they are met together in companies they throw some of it upon the fire round which they are sitting, and presently, by the mere smell of the fumes which it gives out in burning, they grow drunk (*methyskontai*), as the Greeks do with wine. More of the fruit is then thrown on the fire, and, their drunkenness increasing, they often jump up and begin to dance and sing. Such is the account which I have heard of this people.¹⁶

The practice is much the same as that of the Scythians, although the preparation of tents is absent. The use of the verb *methyskesthai* is of some interest: since the Greek language lacks a verb meaning "to get intoxicated from the use of drugs," Herodotus must substitute a verb denoting intoxication from drinking wine. Cannabis is not mentioned

¹³ Herodotus may perhaps be confusing the seeds with the flowering and seed-bearing tops of the plant, which have highly toxic properties.

¹⁴ This is owing to the fact that seeds rolled inadvertently into marijuana cigarettes tend to "pop," when heated sufficiently, thus creating the danger of burns.

¹⁵ Cf. S. Loewe, Summary of the Pharmacological Study of the La Guardia Committee Report, in Solomon, *Marihuana Papers* p. 399: "In a survey of the sources of preparations with marihuana activity, hemp seeds are disclosed as a heretofore unknown source of active substances."

¹⁶ καρπούς δὲ ἡπὸ δένδρεων ἐξευρημένους σφι ἐς φορβὴν κατατίθεται ὠραίους, καὶ τούτους σιτέεσθαι τὴν χειμερινήν. ἄλλα δὲ σφι ἐξευρῆσθαι δένδρεα καρπούς τοιούσδε τῶν φέροντα, τοὺς ἐπεῖτε ἂν ἐς τίνωντὸ συνέλθωσι κατὰ εἰλας καὶ πῦρ ἀνακαύσωνται κύκλῳ περιζομένους ἐπιβάλλειν ἐπὶ τὸ πῦρ, ὁσφραυομένους δὲ καταγιζομένου τοῦ καρποῦ τοῦ ἐπιβαλλομένου μεθύσκεσθαι τῇ ὀσμῇ κατὰ περ' Ἑλλήνας τῷ οἴνῳ, πλεῖνός δὲ ἐπιβαλλομένου τοῦ καρποῦ μᾶλλον μεθύσκεσθαι, ἐς ὃ ἐς ὕρχησίν τε ἀνίστασθαι καὶ ἐς ἡϊόδην ἡπικνέεσθαι. τούτων μὲν αὕτη λέγεται δαίαιτα εἶναι.

by name; the use of *dendrea* and *karpous* seems to suggest something larger than a hemp plant;¹⁷ and although the symptoms of intoxication, euphoria, and lowering of inhibition are implied, there is not enough solid evidence in the passage to permit positive identification of the tree with cannabis.¹⁸ In fact, Herodotus 4.73ff. represents the only passage in Greek literature which can be interpreted, with some degree of certainty, as referring to the use of marijuana for its intoxicating effect. While references to cannabis are not infrequent, they either deal with the use of the plant as raw material for the production of rope and textiles, or describe its various possibilities for medicinal use. Thus, a fragment of Ephippus,¹⁹ the 4th century B.C. author of comedy, includes cannabis²⁰ in a list of delicacies, along with such items as *pyramides* (wheat and honey cakes), *karyon* (nut), and *konchai* (cockles); Apsyrtus refers to cord made of flax or hemp (*sphekoma linou e kannabinon*, *Hippiatricia* 24); Automedon has a simile which compares old cabbage to hemp;²¹ Athenaeus reports that Hieron of Syracuse imported hemp and pitch for use in shipbuilding from the river Rhone;²² and Pausanias makes passing reference to hemp in a discussion of textile manufacture.²³

A somewhat more extensive discussion of cannabis is found in the *Geoponica*: Book 2.40 describes the type of ground most suitable for the growing of hemp (moist ravines)²⁴ and the best time for planting

¹⁷ However, healthy marijuana plants have occasionally been known to grow to twenty-five feet in height; Pliny (*Natural History* 19.174) claims that the hemp of Rosea in the Sabine territory grows tree-high: quod ad proceritatem quidem attinet, Rosea agri Sabini arborum altitudinem aequat; cf. also Rabelais' description of the herb Pantagruelion in the third book of Pantagruel: "Sometimes, it even exceeds the trees in height, and you might then, on the authority of Theophrastus, refer to it as Dendromalache," cf. Solomon, *Marihuana Papers*, p. 147. There is no doubt that Rabelais' Pantagruelion is marijuana, as verified by M. Leon Faye in his monograph *Rabelais, botaniste* (Angers, 1854).

¹⁸ How and Wells, *op. cit.* (n. 12 above), p. 152, are willing to postulate that it is cannabis: "Probably some kind of hemp is meant; the Cannabis sativa is indigenous in Central Asia, hashish is still prepared from Cannabis indica."

¹⁹ Fragment 13, Theodor Kock, *Comicorum atticorum fragmenta* (Leipzig: Teubner, 1884), vol. 2, pp. 256-257.

²⁰ This must be a reference to Cannabis seeds, cf. Pliny *Natural History* 19.175: semen eius in Italia cibus est.

²¹ ἐχθρὸς δειπνήσας τράγειον πόδα, καὶ δεκαταῖον / κανναβῶνης κράμβης μήλων ἀσπάραγον (Epigram 325, *Greek Anthology*).

²² κάνναβιν δὲ καὶ πῖτταν ἐκ τοῦ Ῥοδανοῦ ποταμοῦ (*Deipnosophistae* 5.206).

²³ τὴν μὲν δὴ κανναβίδα καὶ λῶον καὶ τὴν βύσσον σπεύρουσιν ὕσσις ἡ γῆ τρέφειν ἔστιν ἐπιτήδειος (6.26).

²⁴ κάνναβιν δὲ κολοῖς τόποις χαίρει, καὶ διαπαντὸς ἐνέκμους.

(March and April);²⁵ Book 13.11 advises the use of cannabis twigs to drive away bothersome mosquitoes;²⁶ and Book 16.15 describes the use of a mixture of cannabis ashes and honey as a remedy for an ulceration in the lower back.²⁷

If, with the exception of Herodotus, none of the writers cited thus far seems to show an awareness of the toxic properties of cannabis, this might be due to the fact that the context of the various passages quoted made reference to such properties unnecessary or inappropriate.²⁸ However, one should expect botanical and medical authors such as Dioscorides, Galen, and Oribasius to understand and discuss the pharmacological characteristics of the hemp plant, and, indeed, it is in their descriptions that we hear of properties in cannabis which suggest a more thorough understanding of the toxic nature of the plant. It should be noted, however, that the ancient scientific writers disregard the plant tops and leaves altogether, claiming that many of the symptoms, which modern science ascribes to marijuana and hashish consumption, are the result of seed-consumption. Dioscorides, for instance, while briefly dealing with the plant as a whole in his work *Peri Hyles Iatrikes*, describes only the functions of the seeds:

Concerning cultivated cannabis. Cannabis (which some people call cannabion, others schoinostrophon, and yet others asterion) is a useful plant for weaving very strong ropes. Its leaves are like those of the ash tree; it has a foul odor, and long, hollow stems. Its spherical-shaped seeds, when eaten in excess, diminish sexual potency. The juice of the fresh seed, dropped into the ear, is beneficial for earaches.²⁹

A sixth-century illustration of the plant, which appears in a Byzantine MS of Dioscorides and which is probably based on an original sketch

²⁵ σπεύρεται δὲ ὑπὸ ἄρκτουρου ἐπιτολῆς, ἥτις ἐστὶ πρὸ τεσσάρων καλανδῶν Μαρτίων, ἕως ἑαρινῆς ἰσημερίας, ἥτις ἐστὶ πρὸ θ' καλανδῶν Ἀπριλλίων. An earlier date (February) for hemp-sowing is recommended in Book 3.2: τῷ αὐτῷ μηνί (i.e. τῷ Φεβρουαρίῳ μηνί) σῖτον σπεύρειν τριμηναῖον σησάμην, καὶ κάνναβιν. There is another mention of κάνναβιν in 3.3 which discusses the month of March: σπεύρειν δὲ ἐν τοῖς οἰκείοις τόποις σησάμην, τίρας, ξείας, κέγγχρον, καὶ καννάβιον.

²⁶ εἰ δὲ καννάβεως ὑγρὰς κλῶνα ἠνθονῶτα παραθήσεις καθεύδειν μέλλων, οὐχ ἄψονται σου κώνωπες . . . οὐκ ἄδικήσουσι κώνωπες τὸν ἐν τῇ κλῶνι καννάβια ὑποθέντα.

²⁷ ἐὰν τὴν ῥάχιν ἐλκωθῇ . . . καννάβεως καυθείσης σποδιὰ μέλιτι δευθεῖσα ἐπιχρίεται, προσμιχθέντων τῶν μερῶν οὖρον παλαιῶ.

²⁸ Yet the author of the *Geoponica*, an authority on agriculture and plants, might be expected to mention such properties if he had been aware of them.

²⁹ Περὶ καννάβεως ἡμέρου. Κάνναβιν οἱ δὲ καννάβιον, οἱ δὲ σχωνόστροφον, οἱ δὲ ἄστέριον, φυτὸν ἔστιν εὐχρηστον ἐν τῷ βίῳ πρὸς τὰς τῶν ἐντονωτάτων σχωνίων πλοκάς.

by Crateuas, is a reasonably faithful representation of a female *Cannabis sativa* plant.

Dioscorides' reference to an impairment of sexual potency after excessive consumption of seeds, as well as his reference to the analgesic effects of seed-juice in case of ear-aches, is echoed in the writings of Galen. After stating that the plant is somewhat similar in appearance to the chaste-tree (*agnus castus*) Galen describes the seed as hard to digest, bad for the stomach, unwholesome, and a cause of headaches.³⁰ Modern marijuana users would agree with him, at least in part: tea made of marijuana seeds has a disagreeable taste, tends to cause nausea, and is drunk only as a last resort when plant tops and leaves are unavailable. However, Galen mentions connoisseurs who have developed a taste for the seeds:

There are some who fry and consume (the seed) together with other desserts. I call "desserts" those foods which are consumed after dinner in order to stimulate an appetite for drinking. The seed creates a feeling of warmth, and—if consumed in large amounts—affects the head by sending to it a warm and toxic vapor.³¹

Later (Kühn Ed. 12.8) Galen ascribes other properties to the cannabis seed; it

eliminates intestinal gas, and dehydrates (the user) to such a degree that—if eaten in excess—it quenches sexual potency. Some individuals squeeze juice from green seeds and use it as an analgesic for pains caused by ear-obstruction.³²

φύλλα φέρει παραπλήσια τῇ μελίᾳ, δυσώδη καυλοὺς μακροὺς κενούς. καρπὸν στρογγύλον, ὃς ἐσθιόμενος πλείων σβέννυσσι τὴν γονὴν. χλωρὸς δὲ χυλισθεὶς ῥιμῶζει πρὸς τὰς τῶν ὠτων ἀλγηδόνας ἐνσταζόμενος (3.148). A second entry under the heading *κάνναβις* in Dioscorides (3.149) should not be confused with *cannabis sativa*. Here the author describes *κάνναβις ἡγρία* *Althea cannabina*, an herb belonging to the family Malvaceae: *κάνναβις ἡγρία*, οἱ δὲ ὑδράστινα, ῥωμαῖοι *τερμινάλις*, ῥαβδία φέρει ὅμοια τοῖς τῆς ἀλθαίας, μελάντερα δὲ καὶ τραχύτερα καὶ μικρότερα. τὸ ὕψος πῆχεως. τὰ δὲ φύλλα ὅμοια τῇ ἡμέρῳ, τραχύτερα δὲ καὶ μελάντερα ("Wild cannabis, which some people call *hydrastina* [the Romans call it *terminalis*], has stalks like those of the marsh mallow, though darker, rougher, and smaller. Its height is about 18 inches. Its leaves are like those of cultivated cannabis, but they are rougher and darker.")

³⁰ *δυσπεπτόν τε καὶ κακοστόμαχον* (i.e. τὸ σπέρμα ἐστὶν), καὶ κεφαλαλγές, καὶ κακὸν χυμὸν Kühn Edition 6.550).

³¹ ὅμως δ' οἷν καὶ τοῦτό τις ἐσθίουσιν φρύττοντες ἅμα τοῖς ἄλλοις τραγήμασιν. δυομάζω δηλονότι τραγήματα τὰ περὶ τὸ δεῖπνον ἐσθιόμενα τῆς ἐπὶ τῷ πύειν ἡδονῆς ἕνεκα. θερμαίνει δ' ἱκανῶς, καὶ διὰ τοῦτο καὶ κεφαλῆς ἄπτεται βραχεῖ πλείον ληφθέν, ἅτμον ἀναπέμπον ἐπ' αὐτὴν θερμὸν τε ἅμα καὶ φαρμακῶδη (*ibid.*). In the next chapter, while discussing the seed of the chaste-tree, Galen once again refers to the intoxicating properties of the cannabis seed: *κεφαλῆς οὐχ ἄπτεται* (i.e. ἄγνου σπέρμα), καθάπερ *κάνναβις* (Kühn Edition 6.54).

³² *κάνναβως ὁ καρπὸς ἄφυσός τε καὶ ξηραντικὸς εἰς τοσοῦτόν ἐστιν ὥς, εἰ πλείων βρωθεῖ, ξηραίνει τὴν γονὴν. ἔνιοι δὲ χλωρὸν αὐτὸν χυλίζοντες εἰς ὠτων ἀλγήματα χρῶνται*

Contemporary users, in turn, report a general analgesic effect of marijuana, dryness of the mouth and throat, and a decrease in sexual desire, the latter probably owing to the fact that a general sense of euphoria supersedes awareness of sexual sensations.³³ The antifatulent effect of cannabis seeds is not reported by modern users of marijuana, although it may be a result of marijuana's over-all analgesic action.

Like Dioscorides, Galen appears to have been aware of several of the functions ascribed to marijuana, although his discussion is limited to the seeds of the cannabis plant. A similar awareness is evident in the works of Oribasius, the personal physician of Julian: in Book 4.20 of his *Synopsis pros Eustadion ton hyion* he states that cannabis seed "harms the head"; in 4.21 he reports that the seed has antifatulent properties (*karpos kai apo physodon aphysos*), and in 4.31 he includes the seed of cannabis in a list of items which "create a warm feeling" (*bosa thermainei*). In addition, the seed is listed as having certain weight-reducing properties (*bosa leptuontai en trophais*, 4.1).

In general, references to Cannabis sativa in Greek literature fall into two categories: brief mention of hemp or hemp-products (e.g. Ephippus, Apsyrtus, *Geoponica*), or discussion of medicinal or toxic properties of cannabis seeds (e.g. Herodotus, the Greek scientific writers). In Book 4.73ff., Herodotus may well be describing a case of intentional cannabis intoxication, although he himself does not appear to be fully aware of the implications of his report. The Greek scientific writers ascribe a wide range of effects—many corresponding rather closely to the symptoms connected with marijuana use—to the seeds of the plant, but emphasize pharmacological rather than toxicological aspects.

Among the Latin writers, cannabis is mentioned very briefly by Lucilius (fr. 1324 Marx) and by Persius (5.146); in both instances the reference is to rope made of hemp. Varro (as quoted by Aulus Gellius in 17.3) comments on the use of hemp ropes by the Greeks in Book 25

τὰ κατ' ἔμψραξιν, ὡς ἐμοὶ δοκεῖ, γινόμενα. Galen does not clarify whether the juice should be taken internally or applied externally; Dioscorides is specific: it is to be dropped into the ear (ἀρμόζει . . . ἐνσταζόμενος). Why Galen, after using σπέρμα in Kühn, 6.550, should now use the word καρπός is not clear. Theophrastus (*Historia Plantarum* 1.2.1.) defines καρπός as a seed with seed-vessel.

³³ Some modern studies claim that heavy use of marijuana will ultimately cause sexual impotence; cf. A. Benabud, "Psychopathological aspects of the cannabis situation in Morocco: Statistical data for 1956," *Bulletin on Narcotics*, 1957, 9: pp. 1-16; R. I. Bouquet, "Cannabis, Parts III-V," *Bulletin on Narcotics*, 1951, 3: pp. 22-43; and I. C. and R. N. Chopra, "The use of cannabis drugs of India," *Bulletin on Narcotics*, 1957, 9: pp. 4-29.

of his *Antiquities*; further reference to such ropes are found in *Res rusticae* 1.22.1 and 1.23.6. Columella lists hemp among the various types of pulse "pleasing and useful to men" (*De re rustica* 2.7.1.), and outlines the procedures for planting hemp in *De re rustica* 2.12.6 and 2.10.21. The latter passage is quite detailed:

Hemp demands a rich, manured, well-watered soil, or one that is level, moist, and deeply worked. Six grains of this seed to the square foot are planted at the rising of Arcturus, which means toward the end of February, about the sixth or fifth day before the Calends of March; and yet no harm will be done in planting it up to the spring equinox if the weather is rainy.³⁴

The passage seems excessively demanding in setting requirements for proper hemp-growing, since the cannabis plant will flourish quite well in dry, unfertilized, and uncultivated ground.³⁵ At no time does Columella refer to any pharmacological or toxicological properties of cannabis; he considers the plant important merely as raw material for the manufacture of rope.

The Elder Pliny, on the other hand, is aware of a variety of uses for cannabis. After discussing hemp as raw material for rope (*Natural History* 19.29; 19.63), he provides instructions for the cultivation of the plant, as well as a differentiation according to quality on the basis of provenance:

Hemp is sown when the spring west wind sets in; the closer it grows the thinner its stalks are. Its seed when ripe is stripped off after the autumn equinox and dried in the sun or wind or by the smoke of a fire. The hemp plant itself is plucked after the vintage, and peeling and cleaning it is a task done by candle light. The best is that of Arab-Hissar, which is specially used for making hunting-nets. Three classes of hemp are produced at that place: that nearest to the bark or the pith is considered of inferior value, while that from the middle, the Greek name for which is *mesa*, is most highly esteemed. The second best hemp comes from Mylasa. As regards height, the hemp of Rosea in the Sabine territory grows as tall as a fruit-tree.³⁶

³⁴ Cannabis solum pingue stercoreatumque et riguum vel planum atque umidum et alte subactum deposcit. In quadratum pedem seruntur grana sex eius seminis Arcturo exoriente, quod est ultimo mense Februario, circa sextum aut quintum Kalendas Martias; nec tamen usque in aequinoctium vernal, si sit pluvius caeli status, improbe seretur. The instructions regarding the number of seeds per square foot are repeated in 11.2.75.

³⁵ In fact, Mexican marijuana, which is grown under quite severe conditions in an excessively dry climate, represents the main source of supply for North American users. Cf. also Terry Southern's short story "Red-Dirt Marihuana" in Solomon, *Marihuana Papers*, pp. 217-229; Southern has marijuana growing wild in "a section of barren pasture-land where the cows almost never went," and "in the midst of a patch of dwarf-cactus" (p. 220).

³⁶ seritur a favonio; quo densior est eo tenerior. semen eius, cum est maturum, ab aequinoctio autumnii destringitur et sole aut vento aut fumo siccatur. ipsa cannabis vellitur post

While in the processing of the raw product the leaves are stripped from the plant, there is no indication that they were considered of any practical use, even though they constitute the equivalent of marijuana. However, Pliny expressly mentions the harvesting and drying of the ripe seeds and a passage in *Natural History* 20.259 describes their various properties and applications:

Its seed is said to make the genitals impotent. The juice from it drives out of the ears the worms and any other creature that has entered them, but at the cost of a headache; so potent is its nature that when poured into water it is said to make it coagulate. And so, drunk in their water, it regulates the bowels of beasts of burden. The root boiled in water eases cramped joints, gout too and similar violent pains. It is applied raw to burns, but is often changed before it gets dry.³⁷

Pliny seems to be echoing Dioscorides when he mentions the effect of the seed upon sexual potency,³⁸ while the curious reference to the removal of worms and other animals from the ear by means of cannabis juice appears to be the basis of Galen's mention of the use of this liquid as remedy for ear-pain. The force to coagulate water which Pliny ascribes to cannabis juice is recognized by modern science: the New York Mayor's Committee Report states that fluid marijuana extract designed to be administered to various test subjects "was not miscible with water and had a characteristic, disagreeable taste which made it easily recognized. For these reasons the concentrate was evaporated to a viscid consistency and made into a pill form, with glycyrrhiza as the

vindemiam ac lucubrationibus decorticata purgatur. optima Alabandica, plagarum praecipue usibus. tria eius ibi genera: inprobatur cortici proximum aut medullae, laudatissima est e medio quae mesa vocatur. secunda Mylasea. quod ad proceritatem quidem attinet, Rosea agri Sabini arborum altitudinem aequat (19.173ff.). The *Edict of Diocletian* distinguishes between two types of hemp, *κάνναβις κεκαθαυμένη* and *κάνναβις ἐνεσμένη* ἢ *χόλη*, the former fixed at three denarii per pound, the latter at six (Fr. 32. 16-17, Blümner). For an attempt to interpret these designations, cf. Blümner *ad loc.* (p. 179).

³⁷ semen eius extinguere lenituram dicitur. sucus ex eo vermiculos aurium et quodcumque animal intraverit eicit, sed cum dolore capitis, tantaque vis ei est ut aquae infusus coagulare eam dicatur. et ideo iumentorum alvo succurrit potus in aqua. radix articulos contractos emollit in aqua cocta, item podagras et similes impetus. ambustis cruda inlinitur, sed saepius mutatur priusquam arescat. In the same passage Pliny makes brief mention of the origin of hemp: Cannabis in silvis primum nata est, nigrior foliis et asperior ("originally, hemp grew in the woods; it had darker and rougher leaves").

³⁸ Dioscorides' *Περὶ ὕλης ἱατρικῆς*, dedicated to Areios of Tarsos, friend of C. Laecanius Bassus, cos. A.D. 64, was published approximately A.D. 65; Pliny's *Natural History* is dedicated to Titus by a preface of A.D. 77.

excient.”³⁹ Application of the juice in veterinary medicine is not mentioned by previous writers on the subject,⁴⁰ nor is the use of boiled cannabis root in the treatment of cramped joints, gout, and other violent pains, including burns.

While Pliny reports a rather wide variety of domestic and medical application of cannabis, he appears to be totally unaware of its potential as an intoxicant. Subsequent writers on the subject show a similar unawareness. Pseudo-Theodorus, in the additamentum to Theodorus Priscianus, repeats the claim that warm juice pressed from cannabis seeds is useful in treating ear-aches (*Ad. I.21*), and comments on the dehydrating, antifatulent, and impotency-producing properties of the seeds in his treatise *De simplici medicina* 28; Pseudo-Apuleius states that the plant,⁴¹ mixed with grease, may serve to reduce swelling of the chest, and that a pounded mixture of cannabis seed, nettle seed, and vinegar can be applied in treating cold-sores (*Herb.* 116); and Marcellus Empiricus, whom H. J. Rose dismisses as “this amateur of medicine,”⁴² finds it necessary to add to the standard discussion of the plant and its seeds⁴³ a rather fanciful combination of cannabis and magic:

Tie hemp-root to your right arm: preferably wrap the entire arm with this root; but if you only have a small amount, then suspend it from your neck by a thread from a loom. To show you how powerful this remedy is: if you tie the root as instructed, the flow of blood will stop immediately. But when you untie and remove the root, the blood will flow again.⁴⁴

While proclaiming the miraculous hemostatic properties of hemp-root tied around the right arm or suspended from the neck, Marcellus

³⁹ Solomon, *Maribwana Papers*, p. 314. Rabelais echoes Pliny on the matter of coagulation: “If you put some of this juice into a pail of water, you will at once see the water turn, as though it had been curdled, so great is the strength of the plant.” (*Ibid.*, p. 156.)

⁴⁰ Again Rabelais: “And water so curdled is a very good remedy for colicky horses and those who bite at their flanks” (*ibid.*). In a note *ad. loc.* Solomon reports that this remedy was employed in Alsace, in the year 1705, to cure a species of colic among the horses of the French army.

⁴¹ MS. V, dating from approximately 1050, depicts what appears to be the plant *Eupatorium cannabinum*, hemp agrimony, *ad loc.*; MS. T contains a drawing of *Cannabis sativa*.

⁴² H. J. Rose, *A Handbook of Latin Literature* (New York: Dutton, 1960), p. 428.

⁴³ *De medicamentis* 9.27 and 9.77.

⁴⁴ *Radicem cannabis brachio dextro ligato; si totum brachium cinxeris de ipsa radice, melius erit, sin vero partem habueris, collo suspende ligatam licio, quod in tela fuerit, et ut scias, quanta vis sit huius remedii, ubi alligaveris hanc radicem, statim sanguis perstringetur: cum solveris et removeris, fluet* (Marcellus Empiricus, *De medicamentis* 10.81).

obviously is totally unaware of the plant's properties as an intoxicant and hallucinogen. This lack of awareness is characteristic of all other Latin authors cited: cannabis to them is a plant suitable for making rope or, at best, for treating a variety of minor ailments. In turn, their obvious inability to recognize the true significance of the plant is but a reflection of the Greeks' lack of understanding of cannabis. If any ancient writer came close to recognizing those aspects of marijuana which have attracted modern attention, it was Herodotus; and it is ironic indeed that the man who for decades was dismissed as a teller of tall tales should be vindicated on the subject of marijuana.⁴⁵

Thus, the evidence available from Greek and Latin literary sources—while establishing the fact that certain properties inherent in cannabis were known and used for medicinal purposes—does not permit us to postulate use of the plant as an intoxicant in Greece and Rome; claims to the contrary are no more supportable than the periodic attempts to prove marijuana use during Homer's time from the description of the Lotus Eaters, or Helen's drug nepenthe in the *Odyssey*.⁴⁶

⁴⁵ Archaeological evidence lends further credence to Herodotus' report; cf. Blum, *Society and Drugs*, p. 62, who mentions "an archaeological find at Pazrik . . . confirming Herodotus' writing; a cauldron of stones and hemp seeds was found along with tent poles."

⁴⁶ *Odyssey*, Books 9 and 4 respectively. For an attempt to identify Homer's lotus with a preparation of hemp, such as hashish, cf. L. G. Pocock, *Reality and Allegory in the Odyssey* (Amsterdam: A. M. Hakkert, 1959), p. 93. P. Brotteaux (Andrews, *Book of Grass*, pp. 10f.) discusses the possibility that nepenthe may have contained either hemp or an herb of the solanum family, such as henbane, datura, or belladonna.

SCIENCE AND METAPHOR IN THE MEDICINE OF RESTORATION ENGLAND*

PETER H. NIEBYL

When R. F. Jones described the influence of science on the rise of the plain English style, he cited the critical attitude of leading members of the Royal Society toward the use of metaphor and obscure terms. In one instance he also cited a Helmontian "chemical" physician, George Thomson, though not a member of the Royal Society, for his call to study things not words, a view apparently consistent with that of the Royal Society's own historian who claimed that the Society did not regard "Names, but Things" thereby avoiding the "trick of Metaphors" and resulting in "the plainest Method."¹ In his classic study of the battle at this time between "the Ancients and the Moderns" Jones included a number of Helmontian physicians in his Baconian group of Moderns.² It therefore needs to be pointed out that the Helmontian physicians differed sharply with the scientists of the Royal Society in their attitude toward metaphor and as a consequence in their "scientific" method.

While the humanistic use of metaphor gives rise to poetry, rhetoric, and prose style, the scientific use of metaphor gives rise to models and analogies.³ Jones did not make this distinction so that when he cites a given scientist as taking advantage of the pejorative connotation of the free use of metaphor in the humanities in criticizing the work of others, the real issue may have been one of content rather than style. Since metaphors would not be metaphors if they were true, the obvious tactic was to show your opponent was using metaphors. Even the verbose Galen criticized Archigenes for his metaphors in classifying the pulse, noting that physicians can use metaphors that appear very learned to

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¹ R. F. Jones, "Science and language in England of the mid-seventeenth century," in *Seventeenth Century Prose*, ed. Stanley E. Fish (New York: Oxford, 1971), p. 95. Some recent work on J. B. Van Helmont and the Helmontians is cited by Allen G. Debus, "Some comments on the contemporary Helmontian renaissance," *Ambix*, 1972, 19: 145-150.

² R. F. Jones, *Ancients and Moderns* (St. Louis: Washington University Studies, 1936).

³ O. Temkin, "Metaphors of human biology," in *Science and Civilization* (Madison: U. of Wisconsin Press, 1949), pp. 169-194; D. Berggren, "The use and abuse of metaphor," *Reviews of Metaphysics*, 1962-3, 16: 237-258, 450-472; Mary B. Hesse, *Models and Analogies in Science* (Notre Dame: Univ. Notre Dame Press, 1966).

the ignorant when they have no meaning at all.⁴ It was not just seventeenth-century Baconians but Galen himself who called for the study of things, not words.⁵ J. B. Van Helmont, the early seventeenth-century Dutch critic of Galen (Van Helmont's own style has been described as "highly metaphorical") was in fact himself a violent opponent of metaphor in science and medicine. Life and disease, he said, were far too serious a matter to be described by "similitude and metaphor."⁶ Galen and Van Helmont were highly influential but opposing authors for the science and medicine of Restoration England.⁷

Galen's own approach came closest to that of the Rationalists among the ancient medical sects. In contrast to the Empiricist sect the Rationalists stressed: 1) anatomy and dissection, 2) logic proceeding by demonstration and division from axioms, postulates and definitions, 3) analogy to proceed from the evident phenomena to the unknown, and 4) acceptance of the possibility of knowing the internal, temporarily hidden causes, i.e. going from the visible to the invisible.⁸ Van Helmont and his followers in England attacked these propositions. Although only the last two directly concern metaphor, the other two are closely related, as will be seen.

Artificial, Visible Models

Artificial and *natural*, like *metaphor*, are ambiguous terms that, if defined too rigorously, would lose much of their meaning, so the best approach is to see how they are used. In general, an artificial object or

⁴ Galen, *De praesagitione ex pulsibus, Opera*, ed. C. G. Kühn (Leipzig, 1825), IX: 367-371.

⁵ Galen, *Methodus medendi*, X: 61.

⁶ J. B. Van Helmont, *Scabies et ulcera scholarum* #33, in *Ortus medicinae* (Amsterdam, 1648), p. 328; Engl. tr. John Chandler, *Oriatrike* (London, 1662), p. 323. Hereafter bracketed. The treatise title and paragraph number may be used for any edition of Van Helmont's works.

⁷ P. M. Rattansi, "The Helmontian-Galenist controversy in Restoration England," *Ambix*, 1964, 12: 1-23. Here a case is made largely based on Marchmont Nedham for a supposed political alliance between apothecaries and Helmontians against the College of Physicians more than actually discussing the intellectual issues separating Helmontians from Galenic medicine. Also related, Theodore M. Brown, "The College of Physicians and the acceptance of iatromechanism in England, 1665-1695," *Bull. Hist. Med.*, 1970, 44: 12-30, though I question whether the economic threat of the apothecaries had much to do with the acceptance of iatromechanism. My own inclination, as will be seen, would be to suggest that mechanistic and vitalistic positions reflect "deeper" sensibilities than immediate economic interest, sensibilities which by no means rule out political and social influence in the choice of metaphors.

⁸ Galen, "On the medical sects: for beginners," tr. A. J. Brock, in *Greek Medicine* (London: Dutton, 1929), pp. 138-139; see also Galen's *On Medical Experience*, tr. R. Walzer (London: Oxford, 1944), p. 100.

operation, unlike a natural one, is the product of conscious, civilized reason. Hippocratic and Galenic medicine attributed digestion to "concoction," literally a boiling together or cooking.⁹ Aristotle remarked that the *artificial* processes of roasting and boiling, i.e. cooking, are specifically the same as the *natural* ones and lacking in separate terms since *artificial* operations imitate *natural* ones.¹⁰ Both use heat. Aristotle then went on to give a further meaning to the term concoction by identifying it with maturation, as in maturation of fruit. The term he says is used "metaphorically" since there are no specific names for each type but the processes are the same using the same heat.¹¹ It makes no difference whether it (concoction) takes place in an artificial or a natural vessel, for the cause is the same in all cases.¹² Van Helmont certainly had subsequent versions of the above passages in mind when he criticized the "Schools" for using metaphor and "poetic liberty" in translating the artificial cooking performed in the kitchen into the natural process of digestion performed in the living organism.¹³ In England Everard Maynwaringe was clearly following Van Helmont with his attacks on the use of "the similitude of artificial concoctions" for digestion.¹⁴

There were many artificial metaphors that the Helmontians attacked. Another ancient and influential one was the comparison of life to a lamp burning oil.¹⁵ Maynwaringe, again following Van Helmont, rejected the lamp metaphor because it "does not carry any proportion or resemblance and will not hold true."¹⁶ Although Thomas Willis, a physician member of the Royal Society, frequently used the lamp metaphor, Robert Hooke, the secretary of the Society, updated it by changing the idea of old age as used-up oil for the lamp to used-up oil for a clock.¹⁷ The model was still artificial. The lamp idea persisted,

⁹ O. Temkin, "Nutrition from Classical Antiquity to the Baroque," *Human Nutrition Historic and Scientific*. New York Academy of Medicine, Institute on Social and Historical Medicine, Monograph 3, ed. Iago Galdston (New York: International Universities Press, 1960), p. 85.

¹⁰ Aristotle, *Meteorologica* 381b 2-7; tr. H. D. P. Lee (Cambridge: Loeb ed., 1952), p. 309.

¹¹ *Ibid.*, 380a 11-380b 13, pp. 301-305.

¹² *Ibid.*, 381a 11-14, p. 307.

¹³ Van Helmont, *Calor efficienter non digerit* #1-2, p. 201 (198).

¹⁴ Ev. Maynwaringe, *Morbus polyrbizos*, 2nd ed. (London, 1666), p. 48.

¹⁵ P. H. Niebyl, "Old age, fever, and the lamp metaphor," *J. Hist Med*, 1971, 26. 351-368.

¹⁶ Ev. Maynwaringe, *Monarchia microcosmi*, (London, 1692), p. 32. For Van Helmont on the lamp see Niebyl, *op. cit.*, 365.

¹⁷ Robert Hooke, *Posthumous Works* ([1705], New York: Johnson Reprint, 1969), p. 55.

however, for as Claude Bernard pointed out Lavoisier changed it from metaphor to reality.¹⁸

It is not generally appreciated that Van Helmont and his followers, who were called chemical physicians and iatrochemists, considered *in vitro* chemical reactions as metaphors when attributed to *in vivo* processes. The ancient comparison of producing body heat by the ingestion of food to the exothermic reaction of mixing water with lime was dismissed by Van Helmont as that "similitude of lime . . . full of blockish ignorance."¹⁹ Hooke, on the other hand, thought that this and other heat producing reactions found in the world at large might very well be the same as those in the living body, and that this approach was certainly the proper method for "discovering Nature" and "improving Natural Philosophy."²⁰

The English Helmontians were even cool to fermentation analogy so popular with Thomas Willis. There was, said George Thomson, "in *reality* a vast difference between the operations of the vital blood, and those proceeding from the Zymosis (fermentation) of . . . dead things."²¹ The Helmontians did not think it possible to bridge the gap between the living and the dead with metaphor. With regard to this "similitude of wine and blood" Maynwaringe pointed that our understanding of wine generation and alteration is just as obscure so that "then is the analogy frustraneous and of little use."²² Henry Stubbe, conservative physician, defender of the Ancients, and critic of both the Royal Society and the Helmontians, mocked those who deem it a new discovery or a great improvement in science "if they illustrate it by a new metaphor, or introduce a novel term, the import whereof is no more emphatical or perspicuous than the former."²³ Stubbe then turned around and praised Willis for making excellent use of that old Galenic similitude of wine fermentation to explain generation of the blood—adding the references to Galen, though not quite correctly, that

¹⁸ Claude Bernard, *De la physiologie générale* (Paris, 1872), p. 5. I am indebted to Dr. Camille Limoges for this reference.

¹⁹ Van Helmont, *De febris* p. 43, #25-26, in *Opuscula medica maudita* (Amsterdam, 1648), (pp. 976-977).

²⁰ Hooke, *Works*, p. 50.

²¹ George Thompson, (sic. Thomson), *AIMATIA I or, The True Way of Preserving the Bloud* (London, 1670), 42.

²² Maynwaringe, *Morbus polyrbizos*, 3rd ed. (London, 1669), 2nd pagination, p. 111.

²³ Henry Stubbe, *An Epistolary Discourse Concerning Phlebotomy in Opposition to G. Thomson* (London, 1671), p. 63.

Willis had apparently omitted.²⁴ In a sense "chemical" explanations were not new.

Willis's comparison of the brain and skull to chemical apparatus, a glass alembic, has been cited as typical of the whole chemical approach that had been developing.²⁵ The nasal discharge from a head cold was held to be the equivalent of the distillate dripping out of the snout of the alembic. Yet Van Helmont himself had earlier rejected the analogy associating it with the ancient doctrine of catarrh.²⁶ Indeed Galenic physicians had compared the head to a hollow cupping glass in which the condensation occurred.²⁷ Even Robert Boyle remarked that it was the Galenic physicians who used the alembic analogy—adding that it shows how learned men employ chemical operations to illustrate the doctrine of diseases, as if justifying the Royal Society approach.²⁸ At the end of the century Giorgio Baglivi, a frequent user of physical analogies himself, dismissed the alembic analogy as merely a simile popular with the vulgar physicians.²⁹ In this case the vulgar physicians were the learned Galenists, not Helmontians.

In view of Temkin's suggestion that many metaphors in human biology are variations of that great metaphor comparing the macrocosm (the world) to the microcosm (man)—and the above *in vitro/in vivo* comparisons may be put in this category—it is significant that Van Helmont rejected even this great comparison calling it "poetical, heathenish, and metaphorical, but not natural, or true."³⁰ Van Helmont's religious justification for this radical naturalism was that man was created in the image of God and not in the image of the corrupt world at large.³¹ Since the whole method of using artificial analogies

²⁴ *Ibid.*, pp. 114, 119; Galen, *On the Usefulness of the Parts*, tr. M. T. May (Ithaca, Cornell, 1968), 205-206; *On the Natural Faculties*, tr. A. J. Brock, (Cambridge: Loeb ed., 1952), pp. 209-213. R. P. Multhauf in his *Origins of Chemistry* (London: Oldbourne, 1966), p. 235, calls fermentation an anomaly in Galenic system, but from the point of view presented here, it may be considered just one more of Galen's *in vitro/in vivo* comparisons.

²⁵ A. G. Debus, *The English Paracelsians* (London: Oldbourne, 1965), p. 180.

²⁶ Van Helmont, *Catarrhi deliramenta* #14, 20, pp. 429, 431 (432, 435).

²⁷ Andre Du Laurens, *A Discourse of the Preservation of the Sight* (1599) tr. R. Surphlet (London: Oxford, 1938), pp. 141-142.

²⁸ Robert Boyle, *Works* (London, 1772), II, 79.

²⁹ Giorgio Baglivi, *De praxi medica* (Rome, 1696), pp. 30-31; English tr. *Practice of Physick* 2nd ed. (London, 1723), p. 37.

³⁰ For Van Helmont, see note 6 above.

³¹ See note 6 above; *Imago dei*, pp. 712, 714 (718-719). I am here trying to indicate the religious aspect of the Nature-Art antithesis. For other religious aspects of Van Helmont's work see W. Pagel, "Religious and philosophical aspects of Van Helmont's science and medicine," *Suppl. Bull. Hist. Med.*, No. 2 (Baltimore, 1944).

was at stake, it is interesting to see how Boyle, the most active scientist of the Royal Society, dealt with this issue. At first Boyle argues like Van Helmont, though not citing him directly by name, claiming that Paracelsus was injurious to man if he calls man but a "model" of the universe since "God was pleased to make him, not after the world's image, but his own."³² Boyle then hedged, claiming that, while the similitude may not have been so great as the Paracelsians held, the same phenomena not only occur in both worlds but are more discernible in the macrocosm than in the microcosm.³³ Later in his *Vulgarly Receiv'd Notion of Nature* he came out, in effect, squarely against Helmontian naturalism by claiming that many things commonly ascribed to "nature" might be better ascribed to "the mechanisms of the macrocosm and microcosm."³⁴ Boyle even criticized the notion of nature and natural law as "improper and figurative" expressions by extending the legal metaphor to its literal definition (a notional rule of acting according to the declared will of a superior) and then pointing to the absurd presupposition of an intelligent Being capable of receiving and acting by a law, while supposedly ignoring "the general fabric of the world, and the contrivances of particular bodies."³⁵ As if he realized that his own preference for visible structures as analogies was open to the charge of metaphor, he defended them as useful "illustrations" even though they be no more than analogies because:

examples drawn from artificial bodies and things may have both the advantage of being more clearly conceived by ordinary understandings, . . . and I the less scruple to employ such examples, because Aristotle himself and some of his more learned followers make use of diverse comparison drawn from the figures and other accidents of artificial things.³⁶

In short, Boyle clearly comes down on the side of Aristotle rather than Van Helmont in this crucial distinction between the natural and the artificial.

Consistent with Boyle's approach, Henry Power, a physician member

³² Boyle, *Works*, II, 54. The extensive studies of Boyle such as Marie Boas [Hall], "The Establishment of Mechanical Philosophy," *Osiris*, 1952, 10, 412-541, tend to look at him more from the point of view of physics and chemistry than biology and medicine; R. H. Kargon's *Atomism in England from Harriot to Newton* (London: Oxford, 1966) brings out the role of Gassend and Descartes in Boyle's hypotheticalism.

³³ Boyle, *Works*, II, 76.

³⁴ *Ibid.*, V, 231.

³⁵ *Ibid.*, V, 170.

³⁶ *Ibid.*, V, 231.

of the Royal Society, wrote an *Analogia Physico-Chymia* (1666) describing twenty analogous physiological and chemical, i.e. natural and artificial, processes. Webster has noted the close association of Power with Sir Thomas Browne.³⁷ In support of this one should compare the following passage from Browne's *Religio Medici*:

Now nature is not at variance with art, nor art with nature. . . . In brief, all things are artificial, for Nature is the Art of God.³⁸

with Power's assertion that it is not mere rhetoric to say, "all things are artificial; for Nature itself is nothing else but the Art of God."³⁹ This defense probably reflected not only the fact that Browne, a metaphorist and poetic philosopher, had been criticized for his free use of "rhetorical phrase," but also that the statement really did reflect the basic issue. Power may not have been as "skeptical"—cautious in statement is perhaps a more accurate way of putting it—as Boyle or Glanvill, but there was this overall unity of view and method that separated them from Helmontian naturalism. It has been said that it was Descartes' innovation to assert the identity of the artificially constructed product with the naturally generated one as exemplified by his view that a clock constructed from wheels is no less natural than a tree generated from a seed.⁴⁰ But this view has its roots less in the separation of mind from matter (Cartesian dualism) than in the separation of God the Artificer from man, where man, however well designed, lacks a creative force. The design argument itself was of course ancient.⁴¹

Joseph Glanvill, a spokesman for the Royal Society who is generally characterized as a pessimistic skeptic, was nevertheless astonishingly optimistic about what had been and was going to be accomplished with chemistry, anatomy, mathematics, and with such instruments as the

³⁷ C. Webster, "Henry Power's experimental philosophy," *Ambix*, 1966, 14: 151-153. To some extent Webster would seem to suggest that Browne's influence was rather opposite to that of the "new philosophy" of the Royal Society, p. 164.

³⁸ Sir Thomas Browne, *Works*, ed. G. Keynes, 4 vols. (Chicago: Univ. Chicago Press, 1964), I, 26.

³⁹ Henry Power, *Experimental Philosophy* (London, 1664), pp. 192-193.

⁴⁰ A. C. Crombie, "Descartes," in *Dictionary of Scientific Biography*, vol. 4, ed. C. G. Gillispie (New York: Scribner's, 1971), p. 53.

⁴¹ It should also be kept in mind that Cicero uses the clock metaphor in the stoic argument for design. See Cicero, *De natura deorum*, tr. H. Rackham (Cambridge: Loeb ed., 1933), pp. 207-17.

microscope, telescope and thermometer.⁴² To show Glanvill's belief in only probable knowledge and the failure of sensation to reveal true mechanisms Laudan quotes Glanvill as saying:

'Twere next to impossible for one, who never saw the inward wheels and motions, to make a watch upon the bare view of the circle of hours, and index: And 'tis as difficult to trace natural operations to any practical advantage, by the sight of the cortex of sensible appearances.⁴³

The point, however, is that merely observing the outward face of the clock (the cortex) is insufficient. Hence, Glanvill's enthusiasm for anatomy and the microscope. Significantly, the above passage continues as follows:

He were a poor physitian, that had no more anatomy, then were to be gather'd from the physnomy [i.e. physiognomy or gross clinical appearance].⁴⁴

Elsewhere Glanvill justified his faith in anatomy, scientific instruments, and the Royal Society in a similar more explicit fashion.

As we cannot understand the frame of a watch, without taking it into pieces; so neither can Nature be well known, without a resolution of it into its beginnings. . . .⁴⁵

Boyle's equivalent of Glanvill's "poor physitian" was a "very dull inquirer."

He must be a very dull inquirer, who demanding an account of the phenomena of a watch, shall rest satisfied with being told, that it is made by a watch-maker; though nothing be thereby declared of the structure and coaptation of the spring, wheels, balance, and other parts.⁴⁶

It was almost inherent in the analogical approach that the believer should try to search inside the body as much as possible to show that his metaphor contained truth in it just as Galen had done with his

⁴² Joseph Glanvill, *Plus Ultra or, The Progress and Advancement of Knowledge* (London, 1668) is usually less emphasized than the *Vanity of Dogmatizing* (London, 1661), which became *Scepsis Scientifica* (London, 1665).

⁴³ Laurens Laudan, "The clock metaphor and probablism: the impact of Descartes on English methodological thought, 1650-65," *Annals of Science*, 1966, 22: 98. Laudan maintains that Descartes used the clock to justify hypotheticalism, that in turn influenced the English.

⁴⁴ Glanvill, *Vanity*, p. 180.

⁴⁵ Glanvill, *Plus Ultra*, pp. 10-11.

⁴⁶ Boyle, *Works*, V, 245.

anatomical dissection. Thomas Willis, the prominent physician, anatomist, and member of the Royal Society argued similarly.

When anyone would observe the motions of a clock or engine, he takes the machine itself to pieces to consider the singular artifice, and doth not doubt that he will learn the causes and properties of the phaenomenon, if not all, at least the chief.⁴⁷

The pessimism about not learning all the causes is minimal compared to the monumental assumption that one is dealing with an "artifice" that can be understood as if we had made the thing ourselves.

The Helmontians did not share the above assumption and were therefore far more pessimistic about anatomical investigation than Glanvill could ever have imagined possible. Noah Biggs, virtually paraphrasing Van Helmont, claimed that 2000 years of dissection had done nothing for the treatment of disease.⁴⁸ Maynwaringe held that the only use for anatomy was to impress people since it certainly could not cure them.⁴⁹ Indeed the greatest skill in anatomy cannot help a bad medicine. George Thomson criticized Willis as an anatomist for corrupting the whole by dissecting Nature.⁵⁰ Van Helmont's position had been that nothing could be learned from anatomy without a knowledge of life.⁵¹ The "Chymists of London" were following Van Helmont when they agreed that there is great uncertainty in the "Anatomy of the Dead" and furthermore that the same is true of experimentation by fire because these are "no natural resolver of things to their primitive essences."⁵² They added, "For it is written, Why seek you the living among the dead?"⁵³ For them life, disease, and Nature could not be reduced to structure even if visible only in theory.

Nature as an Invisible Analogue

Aristotle was aware that the term *Nature* had several different meanings, but the one that closest approximates the problem here at issue in health and disease is the idea that the object contains in itself

⁴⁷ Thomas Willis, *Practice of Physick* (London, 1684), 2nd pagination, p. 32.

⁴⁸ Noah Biggs, *Mataeothechnia medicinae praxeos* (London, 1651) Summary, p. 9; Van Helmont, *Ignotus hospes morbus* #90, *Ignotus hydrops* #10, pp. 505, 510 (504, 509).

⁴⁹ Ev. Maynwaringe, *Praxis medicorum antiqua & nova* (London, 1671), p. 24.

⁵⁰ Thomson, *True Way*, p. 31.

⁵¹ Van Helmont, *Nexus sensitivae et mentis* #2, p. 359 (351).

⁵² Anon., *The Principles of the Chymists of London* (London, 1676), p. 50.

⁵³ *Ibid.*, p. 56.

its own source of motion.⁵⁴ Even so Aristotle tended to compare natural to artificial motion and generation.⁵⁵ Early in the seventeenth century Sennert had objected to the use of the clock and watch metaphor to explain animate motion and generation on the grounds that they were purely *artificial* and thus could not possibly explain *natural* things that require their own internal active generator.⁵⁶ Although there is sometimes a tendency to associate vitalism and teleology, Van Helmont, in the same vein as Sennert, vehemently rejected Aristotle's purposive Final Cause on the grounds that it applied only to *artificial* things and thus had no place in *natural* things.⁵⁷ They were not objecting to Aristotle's definitions of natural and artificial things; it just seemed that they were no longer compatible with each other, or at least less compatible than ever before. This radical distinction prevented the metaphorical bridge between inanimate artifacts and vital processes, and thus had methodological consequences which the English Helmontian George Thomson clearly saw.

I confess some small illustration made by way of *simily* between animate, and inanimate, mechanical, artificial, and natural, which may please the phantasie of those that are not thoroughly acquainted with the intimate, radical and efficient causes of vital power and actions; the priority (i.e. *a priori*-ness) of which are not intelligible by any mortal, only we are taught *a posteriori*, the effects.⁵⁸

In short the artificial metaphor had only literary value, and the vital causes themselves could only be known by their overt effects.

Thomson did concede that the physician must have sufficient acquaintance with the structure of the body to repair it just as a mechanic ought to be able to repair a watch or clock, but even here Thomson was only giving the weakest possible interpretations to the metaphor, for he goes on to condemn the "impertinent and superfluous searches in stinking carcasses" which are never able to teach how to cure them since they are located in the "vital light."⁵⁹ Maynwaringe too was willing to concede a little to the metaphor; he acknowledged that the body was like clockwork, but the soul, he said, "lies in much

⁵⁴ Aristotle, *Metaphysics*, tr. H. Tredennick (Cambridge: Loeb ed., 1933), 1015a 15-20, p. 223.

⁵⁵ *Ibid.*, 1034a-1034b, pp. 349-351.

⁵⁶ Sennert, *Thirteen Books of Natural Philosophy* (London, 1659), pp. 474-475.

⁵⁷ Van Helmont, *Mortis introitus in naturam humanam decus virginum* #3, p. 645 (648).

⁵⁸ Thomson, *True Way*, p. 42.

⁵⁹ Thomson, *Galeno-pale* (London, 1665), pp. 28-29.

darkness, and acts as it were behind a curtain."⁶⁰ Like Thomson, he claimed the soul was undemonstrable by *a priori* reasoning and hence must be viewed *a posteriori* by its effects;⁶¹ and the Helmontians saw its effects everywhere. The Helmontian "Chymists of London" unanimously agreed at a meeting that both death and disease have their seat in the principle of life, the sensitive soul of man.⁶² As Maynwaringe put it:

This vital Principle is seated in every member of the body, and does preside as Governor; and not only for defence thereof, but also to move and act in it so, as no vital office or function can be performed without the assistance and power of this internal invisible Agent.⁶³

This all important vital soul was invisible. The English Helmontians never expected to see it, so why should one bother to dissect dead bodies except perhaps to prepare oneself for surgical repairs of the body in case of gross trauma. It is of course true that Boyle believed in the soul and metaphorically compared it to the pilot of a ship⁶⁴ just as Descartes⁶⁵ and even Aristotle⁶⁶ had done, but that made little difference as long as disease was in the ship rather than in the soul as the Helmontians believed. In fact Van Helmont's son, while in England, proceeding from the doctrine that all diseases are in life, seems to anticipate the "moral therapy" of a later period with his treatise, *The Spirit of Diseases; or, Diseases from the Spirit: Laid open in some observations concerning man, and his diseases, Wherein is shewed how much the mind influenceth the body in causing and curing diseases*.⁶⁷ Bishop Sprat of the Royal Society noted with some satisfaction that what one fails to find out when studying the body as a watch or clock is the nature of the soul and God.⁶⁸ But this is precisely what the Helmontian physicians considered necessary to understand and cure disease.

⁶⁰ Maynwaringe, *Vita sana & longa* (London, 1669), 126.

⁶¹ Maynwaringe, *Tabidorum narratio* (London, 1667), pp. 6-7.

⁶² Anon., *Principles*, p. 3.

⁶³ Maynwaringe, *The Frequent, but Unsuspected Progress of Pains, Inflammation, Tumors* (London, 1679), p. 171.

⁶⁴ Boyle, *Works*, II, 51.

⁶⁵ Descartes, "Meditation VI", in *Philosophical Works*, tr. E. Haldane & G. Ross (Dover ed., 1955), p. 192.

⁶⁶ Aristotle, *On the Soul*, tr. W. S. Hett (Cambridge: Loeb ed., 1957), 413a 9, p. 73.

⁶⁷ Franciscus Mercurius van Helmont, *The Spirit of Diseases* (London, 1694).

⁶⁸ Thomas Sprat, *The History of the Royal-Society of London* (London, 1667), pp. 82-83.

The English Helmontians may appear somewhat more "Baconian" than Van Helmont himself, but this was more a matter of emphasis. Van Helmont maintained that causes were "far more hidden" than generally supposed,⁶⁹ but he asserted that these hidden efficient causes (personified as the Archeus) contained life and its diseases in patterns or types also called "instructions" or ideas.⁷⁰ Thomson said that these ideas resulted in "forging a numerous company of different pictures of diseases."⁷¹ Otherwise, Thomson said he could not see how a few elements could "cause so many distinct species of feavers . . . such a catalogue of calamitous infirmities, differing in symptoms."⁷² Mental intuition into the invisible complexities of life forced the Helmontian into a clinical stance. Glanvill, on the other hand, explicitly objected to "leaping from the effect to its remotest cause" without the "interposals of more immediate causalities."⁷³ Conversely, the Helmontian Marchamont Nedham could oppose the old, "the doctrinal hypotheses" and like Thomson defend the new *phaenomena* of diseases,⁷⁴ which for Glanvill were mere "physnomy" (i.e. physiognomy) and for Boyle mere "phaenomena of a watch." Thomson dismissed the hypotheses of Willis as "rhetorical super structure, most part sermonical, and little practically salutiferous."⁷⁵

To be sure, Glanvill was a skeptic, but he was primarily skeptical about the "initial causes," the "first springs of natural motions," the "skilful Archeus," or "hidden Architect," and "plastic faculty"—all of which he mocked as fine "words" but invisible and so radically different from the effects they supposedly produce that we can really know nothing about them.⁷⁶ These words were no doubt among those he had in mind when he praised the Royal Society for not being "gaudy by flanting [sic] Metaphors." Ostensibly Glanvill was often attacking scholasticism, but as we shall see later, there is reason to doubt this "old hat" was his real objective.

Both Helmontians and leading Royal Society members thus disliked metaphors—but differed on the metaphors they disliked. Both were

⁶⁹ Van Helmont, *Natura contrariorum nescia*, #13, p. 167 (163).

⁷⁰ Van Helmont, *Causae, et initia naturalium*, #3, 11, pp. 33, 34 (28, 29).

⁷¹ Thomson, *True Way*, p. 41.

⁷² *Ibid.*

⁷³ Glanvill, *Vanity of Dogmatizing*, p. 114.

⁷⁴ Marchamont Nedham, *Medela medicinae* (London, 1665), p. 204.

⁷⁵ George Thomson, 'Ορθο-μέθοδος ιατρο χυμωή· or, *the Direct Method of Curing Chymically* (London, 1675), p. 156.

⁷⁶ Glanvill, *Vanity of Dogmatizing*, p. 43, 210.

skeptics but differed in what they were skeptical about. Both were empiricists but differed in what they observed. To speak of metaphor, skepticism and empiricism in the abstract confuses the real issue.

Finally, it should be noted that Helmontian opposition to hypotheses not only centered on artificial metaphors in the sense of inanimate objects and processes but also the deductive process as such. The use of axioms such as "contraries cure contraries" were called foolish rules, "As if Medicine did not work *naturally*, but . . . by demonstration alone."⁷⁷ Of Aristotle, Van Helmont said: "he hath made Logick as it were native, and proper to us by nature."⁷⁸ Perhaps there is here some insight into Turbayne's recent contention that it has been a largely unrecognized metaphor to assert that Nature obeys the logic of the deductive method, that the deductive process is a physical process, reducing physics to geometry.⁷⁹ For the Helmontian it was just another artificial "contrivance" of reason. Glanvill, on the other hand, gave his highest praise to geometry as "solid and real Philosophy" as a "Method" including logic in which Ramus corrected Euclid and without which one could not understand "the Artifice of the Omniscient Architect" and "Geometrick Mechanicks."⁸⁰ Sir Thomas Browne had called God a geometrician. It was only later in the seventeenth and early eighteenth century that mathematical-type deduction was applied to bio-medical science.⁸¹ But it was to be expected from an "artificial" interpretation of Nature.

Helmontian opposition to the main features of Galenic rationalism,

⁷⁷ See note 68 above, #11-12.

⁷⁸ Van Helmont, *Logica inutilis* #9, p. 42 (32).

⁷⁹ Colin Murray Turbayne, *The Myth of Metaphor*, revised ed. (Columbia, S.C.: Univ. of S. Carolina Press, 1971), pp. 47, 49.

⁸⁰ Glanvill, *Plus Ultra*, p. 25-30.

⁸¹ William Coleman, "Mechanical philosophy and hypothetical physiology," *Texas Quarterly*, 1967, 10: 259-269. Here the role of Newton's mathematics is brought out. Perhaps there was also an aspect of Newton closer to the earlier medical approach of the Helmontians and Sydenham (to be discussed presently). Newton's "forces" (*vis insitae*) may be viewed as an inherently invisible anthropomorphic metaphor like Van Helmont's *Archeus insitae* or Sydenham's Nature. Newton's gravity was accused of being an occult quality. Indeed Glanvill had previously asserted that gravity as a "feigned" quality still occult and a term one might expect from a rustick, (*Vanity of Dogmatizing*, p. 171). When Newton said he "feigned" no hypothesis, and both Helmontians and Sydenham had opposed hypotheses including mechanical ones, he too included mechanical hypotheses of the Boyle-Hooke type to the astonishment of many Royal Society members. Furthermore, Newton also put some of God into his "forces" much to the displeasure of the clock-oriented Leibniz who wanted to deal with only God's artifice. See Alexandre Koyré, *Newtonian Studies* (Cambridge: Harvard, 1965) for the interpretations of Newton's forces.

features also found in Royal Society science, depended in large measure on the location of the invisible creative force, namely in Nature rather than outside his Artifice, in large measure accounts for Helmontian opposition to the essential features of Galenic rationalism (anatomy, artificial metaphor, analogical method, and reduction), which were also the features found in Royal Society science.

Sydenham and Locke

Sydenham's methodological position resembled the Helmontians in several ways.⁸² He opposed anatomy, dissection, and even use of the microscope.⁸³ In a work unpublished at the time he attributed the diseases themselves to "the invisible and insensible spirits that govern, preserve and disorder the oeconomie of the body,"⁸⁴ and went on to identify it with "this Archeus by which name Helmont has as clearly and intelligently explained it" calling it more useful than anything the anatomist can show.⁸⁵ Sydenham's rejection of "physiological hypotheses" in favor of painting "portraits" of diseases may be viewed as consistent with Helmontian concern with the "pictures" of disease phenomena produced by the invisible Archeus.⁸⁶ The "pictures" presuppose a vitalist painter rather than a physiological mechanism.

Now Henry Power, consistent with the anatomical approach to the metaphorical watch typical of the Royal Society, criticized those

⁸² Sydenham seemed to be following Van Helmont in believing that the disease itself was an effort to expel the cause exemplified by the thorn. See my "Helmontian thorn," *Bull. Hist. Med.*, 1971, 45: 579.

⁸³ David E. Wolfe, "Sydenham and Locke on the Limits of Anatomy," *Bull. Hist. Med.*, 1961, 35: 193-220. Lester S. King attributes this to Sydenham's poor education, *The Road to Medical Enlightenment 1650-1695* (New York: Elsevier, 1970), p. 116. Wolfe notes Boyle's favorable view of anatomy but not the Helmontian opposition. Van Helmont himself was well educated.

⁸⁴ Thomas Sydenham, "Anatomie, 1668," in Kenneth Dewhurst, *Dr. Thomas Sydenham (1624-1689) His Life and Original Writings* (Berkeley: Univ. of California Press, 1966), 91. Locke to whom the treatise was traditionally ascribed cannot be absolutely ruled out as a possible author.

⁸⁵ *Ibid.*, p. 92.

⁸⁶ Thomas Sydenham, *Works*, tr. R. G. Latham (London: Sydenham Soc., 1848), I, 14. Without getting involved in the question of whether Van Helmont's (or Sydenham's) concept of disease in general is or is not ontological, it may be noted that Pagel, with justification, has used a dual Archeus and a dialogue between them in his most recent version of Van Helmont's "externalised" concept of disease, W. Pagel, "Van Helmont's Concept of Disease—To Be or Not To Be?" *Bull. Hist. Med.*, 1972, 46: 419-454. Yet it is probably still fair to say that Van Helmont often talks as if there is only one Archeus involved in the disease process—as do his 17th century followers and critics—reacting to an external occasional cause.

notional speculators who "like a rude country fellow" only look at the "visible effects," the movement of the hands, without understanding the internal fabric of the watch as does the anatomist and microscopist, who like a skilled "artificer," knows the "internal contrivance of such anatomical engines."⁸⁷ Sydenham in effect turned Power's use of the clock metaphor upside down by identifying with the "miserable beings" and "rude admirer" who cannot possibly know *the way* the Supreme Artificer made the elegant clock.⁸⁸ As if he were Glanvill's "poor physitian" and Boyle's "very dull inquirer," Sydenham the clinician was quite content merely to look at the visible effects and attribute them to an invisible Nature whose mechanisms cannot and need not be known for the practice of medicine. Significantly, John Locke, physician as well as philosopher and close friend of Sydenham, used the clock metaphor in the same way as Sydenham, identifying with the ignorant "countryman," who, unlike the intelligent watch-maker, sees only the outward motions of the watch or clock. He uses this example to illustrate his belief that:

The workmanship of the all-wise and powerful God in the fabric of the universe, and every part thereof, further exceeds the capacity and comprehension of the most inquisitive and intelligent man, than the best contrivance of the most ingenious man doth the conceptions of the most ignorant of rational creatures.⁸⁹

In the debate among philosophers over Locke's Realism the above passage has been quoted by Yost to illustrate Locke's "pessimism." A more optimistic interpretation is given by Mandelbaum and subsequently Laudan by trying to associate Locke's views with Boyle's. Part of the problem rests on deciding what constitutes scientific knowledge for Locke. The pessimistic view derives from the assumption that science is only concerned with the hidden internal mechanism. The optimistic interpretation of Locke tries to maintain that Locke allowed for some fruitful hypothetical knowledge about the same internal mechanism, and that we can have some presumptive knowledge of the

⁸⁷ Power, *Experimental Philosophy*, p. 193. This passage is referred to in Laudan, "Clock metaphor," p. 101; see also his "The nature and sources of Locke's views on hypotheses," *J. Hist. Ideas*, 1967, 28: 211-223, where he tries to make Locke sympathetic to the mechanical hypotheticalists.

⁸⁸ Sydenham, *Works*, II, 84. Wolfe, "Sydenham and Locke," p. 210, considers the passage extraordinary and does not cite Locke's or Power's use of the metaphor.

⁸⁹ John Locke, *An Essay Concerning Human Understanding*, ed. A. C. Fraser (New York: Dover, 1959), II, 64-65; Cited by R. M. Yost, Jr., "Locke's rejection of hypotheses about sub-microscopic events," *J. Hist. Ideas*, 1951, 12: 126.

"real" (invisible) essences in general and in the abstract as by figure, size, texture, etc.⁹⁰ In this case medicine would have to be classed as ordinary knowledge as well, for Locke, unlike Boyle, clearly put it in the outward (nominal, visible) category. Boyle criticized physicians in general for not being able to explain why rhubarb purges and suggests that his "fertile and comprehensive principles of philosophy, the motions, the shapes, magnitudes and texture of minute parts of matter" will be able to give such explanations by viewing the body as an engine of many strainers of differing textures (liver, spleen, kidneys, etc.) through which these medications must pass.⁹¹ Locke, on the other hand, acknowledged that if one would discover the figure, size, texture, motions of the minute constituent parts, then one could explain why rhubarb purges.

But whilst we are destitute of senses acute enough to discover the minute particles of bodies, and to give us ideas of their mechanical affections, we must be content to be ignorant of their properties and ways of operation; nor can we be assured about them any further than some few trials we make are able to reach.⁹²

Even these few trials should probably be interpreted as clinical trials. Much closer to Locke than Boyle is Sydenham's rhetorical question asking how one could demonstrate the pores in the liver, kidneys, or other parts, and how this could help treatment or show the action of rhubarb on these pores and particles.⁹³ Later in his *Essay* Locke again returns to the watch metaphor in the context of dealing with the philosophical problem of dividing genera into species. The watch serves as an example of a generic *artificial* thing which can be divided into species according to its internal contrivance although some ignorants may only view it generically from the outside. Locke then says that there is more confusion and uncertainty with regard to *natural* things.

... the species of artificial things are distinguished, with less doubt, obscurity, and equivocation than we can in things natural, whose differences and operations depend upon contrivances beyond the reach of our discoveries.⁹⁴

Locke, like the Helmontians, believed in an unbridgeable gap between the artificial and the natural. For the natural phenomena of biology and

⁹⁰ Maurice Mandelbaum, *Philosophy, Science, and Sense Perception* (Baltimore: Johns Hopkins, 1964; paperback 1966), pp. 42-43, 48, 51-52; Laudan, "Clock metaphor," p. 86.

⁹¹ Boyle, *Works*, II, 191.

⁹² Locke, *Essay*, II, 216-217; Yost, "Locke's rejection of hypotheses," p. 127.

⁹³ Sydenham, "Anatomie," pp. 85-86.

⁹⁴ Locke, *Essay*, II, 90.

medicine internal mechanisms were unacceptable. This of course still left an empirical level for clinical description. One of the important functions of logic in Galenic medicine had been to aid division of genera or diseases into species. Now the ultimate species of disease would in effect have to rest on gross clinical description without the aid of deductive categories, and significantly, this statement could also serve to characterize Sydenham's well known "empirical" achievement in medicine.

The watch was in a sense the "black box" of scientists in Restoration England but it also illustrates how a root metaphor can tie together both the philosophy, methodology, type of empiricism and content of a scientific community and those of another that opposes it.⁹⁵

Socio-cultural Factors

Scholars of English literature such as Jones, Williamson, and Cope have long associated Restoration attacks on metaphor with Anglican attacks on enthusiasm, especially Puritan enthusiasm, and Glanvill has been recognized as a leader in this attack.⁹⁶ His target was ostensibly the pedantic traditionalism and the Aristotelian scholasticism the Puritans had attacked long ago.⁹⁷ Significantly, Van Helmont himself was considered an "enthusiast" by many.⁹⁸ Sprat, who like Glanvill was an Anglican cleric, spokesman for the Royal Society, and opponent of metaphor, accused one group of chemists, clearly the Helmontians, of being "downright enthusiasts."⁹⁹ Similarly, Willis, also a Royal Society Anglican, attacked pseudo chymists who were obviously Helmontians as "fanatic."¹⁰⁰

Curiously enough, the term "enthusiasm" cannot only be applied to the Helmontians' own socio-political behavior but to their metaphors as well. The personified diseased parts, far from showing cool, rational behavior—as one might expect from the *vis medicatrix naturae*—tended

⁹⁵ Derek J. de Solla Price, "Gods in black boxes," in *Computers in Humanistic Research*, ed. E. A. Bowles (Englewood Cliffs, N. J.: Prentice Hall, 1967), ch. 1. The student in the Cavendish Lab in the 1880s was required to deduce the interior network of the black box from the electrical properties of the external terminals, see fn. 5., p. 6; Turbayne discussed the face and hands of the clock as opposed to its mechanism in his *Myth of Metaphor*, pp. 214-215.

⁹⁶ Truman G. Steffan, "The social argument against enthusiasm," *Texas University Studies in English*, 1941, pp. 39-63.

⁹⁷ Jackson I. Cope, *Joseph Glanvill, Anglican Apologist* (St. Louis: Washington University Studies, 1956).

⁹⁸ Nedham, *Medela medicinae*, p. 15; Robert Sprackling, *Medela ignoratiae* (London, 1665), pp. 157-158.

⁹⁹ Sprat, *History of the Royal Society*, p. 37.

¹⁰⁰ Willis, *Practice of Physick*, 4th pagination, p. 131.

to exhibit violent, often irrational passions.¹⁰¹ One of the features of the earlier so-called "Counter-Renaissance" against the classical Humanism was the emphasis on instincts, natural inclinations, and even passion over reason, moralism, intellectualism, and faith in prescribed education. Associated with this was a favoring of practice over theory, fact over logic, and the natural over the artificial—a protest of Nature against Art.¹⁰² Van Helmont's naturalist protest against artificial metaphors may be viewed as partly a result of this larger development, as well as his own anti-academic attitude towards the "Schools." This anti-rationalism that may be viewed as a kind of sub-cortical enthusiasm was not going to appeal to the Anglicans in their quest for Rules and Reason regardless of their actual political and economic behavior.

Mechanical metaphors have a certain built-in stability and rigidity, as well as predictability, which can have political parallels. Sennert, in his previously mentioned criticism of the artificial clock and watch metaphor used to explain biological generation, noted that at the same time an equally unnatural political analogy was drawn whereby, just as the mechanical instrument supposedly runs by itself without interference after the artist has made it, so too it is asserted that the King or other Potentate rules distant lands without direct control but by virtue of having conferred laws, judges, ministers and vicars which then operate by themselves. In contrast to this absentee ruler Sennert himself believed that the living seed required the actual presence of the vital soul, the artificer himself. Van Helmont variously identified the Archeus with a monarch or a master workman. Maynwaringe, the English Helmontian, claimed that the soul governs man by a monarchical power and to admit of any other Principle as sharing in this government was "a diminution of Royalty, and lessening of the Prerogative."¹⁰³ For example, he argued that the Galenic doctrine of elemental temperments "dethrones and devests the governing principle of its regality and ruling power."¹⁰⁴

The politicized watch metaphor appeared again in Nehemiah Grew, the plant anatomist and believer in "divine art," who argued that the watchmaker's art was analogous not only to nature but to the wisdom of the king "not seen by his interposing himself in every case, but in the

¹⁰¹ Niebyl, "Sennert, Van Helmont, and medical ontology," *Bull. Hist. Med.*, 1971, 45: 115-137.

¹⁰² Hiram Haydn, *The Counter-Renaissance* (New York: Grove Press, 1960), pp. 468, 481, 482.

¹⁰³ Maynwaringe, *Monarchia*, p. 22.

¹⁰⁴ *Ibid.*, p. 29.

contrivance of his laws and constitution of his ministers."¹⁰⁵ It appeared in the well-known Clarke-Leibniz debate in which Clarke defended Newton's ever-present God against Leibniz's absentee clock-maker who left the universe in a perfect pre-established order that would run forever.¹⁰⁶ Clarke argued like Sennert and Maynwaringe:

If a King had a Kingdom wherein all Things would continually go on without his Government or Interposition, or without his Attending to and Ordering what is done therein: It would be to him, merely a Nominal Kingdom; nor would he deserve the title of King or Governor.¹⁰⁷

Leibniz's reply, as Koyré points out, was to imply that this was a view of the enthusiastic Socinians of God, a significant thought since Clarke, Newton, and Locke were all Unitarians and not close to the views of the established Church.¹⁰⁸

It has been said that the main theological problem of the seventeenth century was the definition of God's power.¹⁰⁹ Certainly the main political problem of the age was the definition of the King's power. We have seen that one of the main bio-medical problems of the age was the definition of the vital spirit's power in the human body. Metaphor would seem to have allowed for some cross-over in thought both for those favoring free, even spontaneous will and those favoring more permanent structure. Whatever the degree of political and theological involvement in the choice of metaphor in science and medicine, the fundamental problem of the relation of the "artificial" to the "natural" seems both much older and at the same time much more modern, and therefore perhaps deeper than the immediate political and theological problems of Restoration England.

At the close of the seventeenth century Georgio Baglivi, although highly critical of the many "fictitious similes" used by ignorant physicians, nevertheless acknowledged that "arguing by way of analogy and similitude" was responsible for all the discoveries of medicine and experimental philosophy of this last age.¹¹⁰

¹⁰⁵ Nehemiah Grew, *An Idea of a Phytological History Propounded* (London, 1673), pp. 101-103, cited by Richard S. Westfall, *Science and Religion in Seventeenth-Century England* (New Haven: Yale University Press, 1957), p. 98.

¹⁰⁶ Alexandre Koyré, *From the Closed World to the Infinite Universe* (New York: Harper & Row, 1957), pp. 236-237.

¹⁰⁷ *Ibid.*, p. 238.

¹⁰⁸ *Ibid.*, p. 239, 301-302.

¹⁰⁹ R. L. Colie, *Light and Enlightenment* (Cambridge: University Press, 1957), p. 71.

¹¹⁰ Georgio Baglivi, *De praxi medica* (Rome, 1696), p. 31. For Engl. tr. see Georgio Baglivi, *The Practice of Physick* (London, 1723), pp. 37-38.

THE HOSPICE OF THE PARIS COLLEGE
OF SURGERY (1774-1793)
"A UNIQUE AND INVALUABLE INSTITUTION"*

TOBY GELFAND

Clinical hospital courses were conducted in several European centers during the Ancien Régime. The outstanding example and the one which served as the model for later courses was Herman Boerhaave's bedside teaching at Leyden's Caecilia Hospital, beginning in 1714.¹ In 1754, Boerhaave's pupil, Anton de Haen established this kind of medical instruction at the Vienna municipal hospital.² In both instances, a small number of hospital beds, six for male patients and six for females, were set aside for teaching purposes. Thus, by limiting and selecting patients, the professor was able to discuss certain cases in detail while the students followed the course of the disease and its treatment.³ In Paris, no comparable institution for hospital teaching existed until 1774 when the hospice of the College of Surgery was created by royal edict.

In December 1774, Louis XVI, newly crowned King of France, established a small hospital or hospice of six beds as part of the Paris

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¹ For Boerhaave's clinical teaching and that of his predecessors at Leyden, see G. A. Lindeboom, *Herman Boerhaave, The Man and His Work* (London: Methuen, 1968), pp. 283-305.

² J. Boersma, "Antonius de Haen, 1704-1776, life and work," *Janus*, 1963, 50: 271-278.

³ Eighteenth-century authors considered the selection of a small number of patients to be a principle of critical importance for clinical instruction. Boerhaave's figure of six male patients and six female was often followed. See Georg Christoph Wurtz, *Mémoire sur l'établissement des écoles de médecine pratique à former dans les principaux hôpitaux civils de la France à l'instar de celle de Vienne* (Paris, 1784), p. 17. Wurtz described the clinical teaching conducted by Maximilian Stoll, de Haen's successor at Vienna. *Ibid.*, pp. 17-27. W. Turnbull (trans.), *A Treatise on surgical diseases and on the operations required in their treatment, from the French of Messrs. Chopart and Desault* (London, 1797), I, 16 fn., mentioned that the Edinburgh infirmary selected about 25 or 30 patients out of a total of about 200 and placed them in separate teaching wards.

College of Surgery.⁴ Fourteen years later Jacques Tenon (1724-1816) in his monumental *Mémoires sur les hôpitaux de Paris* (1788) referred to the surgical hospice as a "unique and invaluable institution." Tenon offered three principal reasons for his praise of the small hospital, which by then had been expanded to twenty-two beds. First, the hospice was concerned with advancing practical surgical knowledge. Second, it received and trained talented surgical students. Finally, the hospice was to some extent a model for administering hospitals according to sound principles of public health.⁵

Research, teaching, and public health, then, were, in Tenon's opinion, what made the hospice "unique and invaluable." As a leading authority on hospitals throughout Europe, Tenon was eminently well qualified to judge. Moreover, he was himself a surgeon with extensive first-hand experience working in hospitals. During the 1740s and 1750s Tenon had spent three years as a surgical student at the Hôtel-Dieu of Paris, followed by several years of service in military hospitals and six years as chief resident surgeon or *gagnant-maîtrise* of the Salpêtrière hospital.⁶ Tenon was particularly well acquainted with the royal surgical hospice. In fact, he had originally proposed its creation and served as one of its chief surgeons.

The project to establish a small hospital in connection with the College of Surgery seems to have had its genesis in a letter written by Tenon to the king's first surgeon, Germain Pichaut de la Martinière, in 1764.⁷ Tenon, then a professor at the College of Surgery, advised La Martinière:

... try to turn the king's attention to the great usefulness of having a hospital of surgery attached to the College of Surgery. . . .⁸

Tenon's letter of 1764 revealed that he had given careful thought to his proposal. He viewed the hospice as an institution which would advance knowledge of practical surgery and particularly, military

⁴ *Edit portant établissement d'un hospice dans les écoles de chirurgie de Paris, et création d'une chaire nouvelle de chemie*, Dec. 1774, (Paris, 1775).

⁵ Jacques Tenon, *Mémoires sur les hôpitaux de Paris* (Paris, 1788), pp. 52-54.

⁶ Georges Cuvier, "Eloge historique de Tenon," 1817, *Recueil des éloges historiques lus dans les séances publiques de l'Institut de France*, new ed. (Paris, 1861), II, 85-110. Cuvier's éloge was based on Tenon's personal notes. *Ibid.*, p. 86.

⁷ Bibliothèque de l'Académie de Médecine, Archives de l'Académie Royale de Chirurgie, Carton #10. The MS letter is dated 30 July 1764 and will hereafter be cited as "Tenon letter, 1764." See below, appendix (A).

⁸ *Ibid.* fol. 3.

surgery. To accomplish this goal, Tenon recommended that patients and attending surgeons be selected with great care. He thought admission of patients should be restricted to "... the most serious surgical conditions and especially gun shot and stab wounds. . ."⁹ The hospital surgeons should be chosen from the most skillful and "learned" Paris surgeons. It is likely that Tenon had in mind himself and his fellow professors at the College of Surgery.¹⁰ He urged that the hospital surgeons work together for the advancement of practical surgical knowledge.

Tenon proposed that the hospice have only twelve beds.¹¹ The size may have been dictated in part by his realization that a larger foundation was unrealistic financially. But he was probably also influenced by the examples of Boerhaave and de Haen.¹² In any case, Tenon believed that large hospitals had contributed minimally if at all to surgical progress because their surgeons were overburdened with the care of patients: "Surgeons in the major hospitals see too many patients and do not ponder them sufficiently. That is why one has never been able to count on them to advance the art [of surgery.]"¹³ A small hospital would help solve this problem and permit the hospital setting to realize its potential for the study of diseases. Furthermore the amount of time which any consultant surgeon would have to sacrifice from his private practice would be slight.¹⁴

Tenon envisioned that the hospice would also serve as a practical school. In this connection, he cited the precedent of de Haen's hospital school in Vienna.¹⁵ Tenon summarized his concept of a hospice as a teaching and research institution, complementing the public courses at the College and the investigations of the Academy of Surgery as follows: "You," he wrote to La Martinière:

would admit pupils of your *école pratique* into this surgical hospital. It would be a reward for their labors. Observations and careful, well-performed [clinical] trials--

⁹ *Ibid.* "... un hôpital de chirurgie où il y aurait 12 lits toujours remplis de malades atteints de faits les plus graves de chirurgie et surtout de plaies d'armes à feu et d'armes blanches. . ."

¹⁰ *Ibid.* Tenon thought there should be twelve surgeons for the hospital service. In 1764 there were twelve professors at the College of Surgery. He had been named Professor of Pathology in 1757 and held this post until the abolition of the school in 1794.

¹¹ *Ibid.* See note 9 above.

¹² See note 3 above.

¹³ "Tenon letter, 1764," fol. 4. See below, Appendix (A).

¹⁴ *Ibid.*, fols. 3-4. Tenon proposed that each of the twelve consultant surgeons be made particularly responsible for one patient. The surgeon's name and his prescriptions would be posted on his patient's bed thus providing an additional incentive for superior care.

¹⁵ *Ibid.*, fol. 4.

indeed performed better than has heretofore been possible—would pour into the Academy of Surgery. No facts would be lost, because it would be easy and necessary to make autopsies the rule. The *école pratique* of dissections and operations would profit as would [the public courses] in the amphitheater.¹⁶

Tenon's proposal for a surgeon's hospice was not a purely altruistic and abstract scheme. He intended that the hospice should serve the special professional interests as well as the academic needs of his colleagues. Specifically he believed the project could be used to obtain financial support from the royal government: "I must pass over many other advantages of this project without commenting. At this time, the greatest advantage that I see is that patronage for the surgical hospital will make it easier for us to build our College."¹⁷ In the mid-1760s the Paris surgeons' foremost concern was to expand their physical facilities to keep pace with the rapid growth of their College and Academy. They had ambitious plans for acquiring property and constructing buildings to accommodate their public courses, academic séances, private guild meetings, their anatomical dissection school, their expanding library, etc.¹⁸ To bring these plans to fruition, government support would be necessary and, as Tenon pointed out, royal funds, which might not be forthcoming for narrow professional purposes, were more likely to be granted for a hospital. Both the church and the military would favor the establishment of a hospital, each, as Tenon said, for its own particular interest: "The Church will back your project with the King, as a work of piety, the military as a boon to military surgery."¹⁹

As it turned out, the Paris surgeons, led by La Martinière, succeeded in obtaining funds from the royal treasury for their private building plan. Jacques Gondoin, the king's architect, took charge of the project and the magnificent new surgical buildings were ready for use by 1774. In his edict of December of that year, Louis XVI pledged to continue

¹⁶ *Ibid.*

¹⁷ *Ibid.*, fol. 5.

¹⁸ In his letter, Tenon discussed the Paris College of Surgery's need for new and larger facilities; *ibid.*, fols. 6, 8. He devoted a good portion of his letter to the subject of purchasing land for constructing surgical buildings and how government support could be obtained. See also Paul Delaunay, *Le monde médical parisien au dix-huitième siècle*, 2nd ed. (Paris, 1906), p. 203.

¹⁹ "Tenon letter, 1764," fols. 6-7. Tenon proposed a detailed strategy to La Martinière for gaining support for the hospice project. He named high-placed royal officials whose patronage would be valuable, and he expressed the hope that members of Parlement and wealthy individuals in general [*gens de bien*] could be persuaded to take an interest in "our work and our glory." He even submitted a rough draft of how he thought royal letters patent beneficial to surgery should be worded. *Ibid.*, fols. 7-8.

his predecessor's support of the surgical profession and announced the establishment of a hospice of six beds within the new buildings. The hospice would admit indigent patients of both sexes with "grave and extraordinary surgical diseases requiring long and expensive treatment which could not be given in the other hospitals."²⁰ Admission of patients with "ordinary diseases" was forbidden. All aspects of the hospice's administration were entrusted to a board of nine eminent Paris surgeons, led by the king's first surgeon.²¹ The professors of the College of Surgery took charge of the treatment of patients.²² In short, the essential features of Tenon's 1764 proposal had been adopted and given a legal and financial basis by the government.

In 1783 the Crown, in response to requests by La Martinière, purchased additional property for the hospice and added six more beds.²³ At the same time, La Martinière endowed ten beds with his personal funds, bringing the total to twenty-two beds, twelve for male patients and ten for females. All kinds of surgical patients were now to be admitted, but preference was still given to "grave and extraordinary cases."²⁴

From the group of fifteen professors who served as consultants to the hospice, one chief surgeon was elected periodically. At first, the chief surgeon's post rotated every six months, but in 1783, his tenure was increased to two years.²⁵ The chief surgeon's duties included

²⁰ *Edit portant établissement d'un hospice* ... 1774, art. 1. The government provided 6000 £ annually for the hospice and 1000 £ for a new professorial chair in "surgical chemistry." *Ibid.*, arts. 4, 5.

²¹ *Ibid.*, art. 2. In addition to the king's first surgeon, the administrative board consisted of the lieutenant of the first surgeon, the permanent secretary of the Academy of Surgery, the director of the Academy, the vice director of the Academy, the senior provost of the College and three other members chosen by them. This board had been established in 1769 to administer the finances of the Academy of Surgery. See *Lettres patentes du roi qui confirment l'aquisition faite de diverses bâtimens, en faveur du Collège et de l'Académie royale de chirurgie*, 24 Nov. 1769, Paris, 1769, art. 5.

²² *Edit portant établissement d'un hospice* ... 1774, art. 3. In 1778 a regulation specified that the hospice would have fifteen consultant surgeons: ten professors of the College, four professors of the *école pratique*, and the lieutenant of the king's first surgeon. Bibliothèque de la Faculté de Médecine de Paris, MS 2275, Carton #1, "Règlement provisoire de discipline pour l'exercice de la chirurgie dans l'hospice royal fondé au collège de chirurgie," 15 April 1778, art. 1.

²³ *Lettres patentes du roi concernant l'hospice fondé dans les écoles de chirurgie de Paris*, 5 June 1783 (Paris, 1783).

²⁴ *Ibid.*, art. 1.

²⁵ "Règlement provisoire de discipline ... dans l'hospice royal," 1778, art. 2. *Lettres patentes ... concernant l'hospice* ... 1783, art. 6. The king's first surgeon appointed the chief surgeon of the hospice and a substitute chief surgeon.

making daily rounds and keeping written records of the patients' clinical courses. He was forbidden to perform an operation without first conferring with at least two consultants and having them attend the operation.²⁶ The surgeons of the hospice thus worked as a team. All contributed their talents as consultants and served in turn as chief surgeons. That they were the leaders in their field is evident from a partial list of successive chief surgeons of the hospice: Antoine Louis, Tenon, Pierre-Joseph Desault, Pierre Lassus, Philippe Pelletan, François Chopart, and Antoine Dubois. When French medical education was reorganized in 1794, the last five men received professorial posts at the new Paris medical school.

The daily journal kept by the chief surgeons permits a reasonably good reconstruction of the functioning of the hospice. The surviving fragment of this manuscript journal contains twenty-nine case histories of patients received between 1 January 1779 and 2 October 1780 during the tenures of Louis, Toussaint Bordenave, and Tenon as chief surgeons.²⁷ In keeping with the founding legislation of the hospice, most of the cases received were serious surgical problems. They included urinary bladder calculus, cancer of the breast, perineal fistula, aneurysm, osseous necrosis, etc.²⁸ The hospice thus received patients whose ailments were comparable with the most formidable problems treated in the major hospitals. Certainly the cases were more difficult than those seen in ordinary private surgical practice and in the parish hospitals, and most of the surgical cases in the major hospitals. The hospice was far from a simple infirmary.

The case records described the patients' clinical histories in detail, sometimes going back years before entry into the hospice. In a few instances, patients with incurable conditions or with venereal diseases

²⁶ "Règlement provisoire de discipline . . . dans l'hospice royal," 1778, arts. 8,9.

²⁷ Bibliothèque de la Faculté de Médecine de Paris, MS 2275, Carton #1, "Journal de l'hospice du Collège Royal de Chirurgie de Paris." The journal consists of 102 MSS pages. An archivist's note states that the original journal was 281 pages.

²⁸ *Ibid.* The cases will be cited by number as they were listed in the "Journal de l'hospice." Urinary bladder calculus (#12), cancer of the breast (##22,24,25), perineal fistula (##20,21), aneurysm (#26), osseous necrosis (##1,4,7,14,17). Examples of other cases were fractures of the skull (#9) and the radius (#18), various tumors (##8,11,13,16,19,27,29), and ulcers (##3,6). Antoine Dubois reported that he had performed operations for strangulated inguinal hernia and the caesarian operation at the hospice. Pierre Lassus studies diseases of joints. Bibliothèque de l'Académie de Médecine de Paris, MS 26, "Procès-verbaux de l'Académie Royale de Chirurgie," séance 17 Jan. 1793. For brief notes on cases received at the hospice between 1787 and 1792, see Bibl. de l'Acad. de Méd., MS 17, "Troisième registre du bureau d'administration des fonds de l'Académie royale et de l'hospice de chirurgie."

remained only a few days for cursory treatment. This happened in the case of a woman with a huge "chancrous ulcer" of the face.²⁹ The surgeons judged that cauterization would not be helpful and that resection with the knife would be impractical. They pronounced the case incurable and the patient was discharged. But, in general, the surgeons were willing to admit and to devote many months to struggling with intractable conditions. One patient suffering from a tumor at the knee joint remained in the hospice for nine months without being cured.³⁰ Another with necrosis of the tibia subsequent to a gunshot wound was finally cured after more than five months' treatment.³¹ Altogether eleven of the twenty-nine cases were discharged from the hospice as cured and ten not cured. Six patients died and the fate of two was not clear. All but four patients remained more than a month and twelve for more than three months.

The chief surgeon relied on the advice and assistance of his professional colleagues in making a diagnosis, in deciding on therapy, and, when an operation proved necessary, in performing the operation. The cases in the journal book indicate that consultations were frequent and well attended. Tenon, for example, called four consultations in less than two weeks in a case of a false aneurysm before proceeding with the operation.³² Twelve eminent surgeons attended the operation and three of them—Chopart, Desault, and Lassus—assisted Tenon.

The hospice's research orientation is particularly evident in those cases which had a fatal outcome. Post-mortem examinations were performed not so much to determine the cause of death, but to study the anatomical traces of diseases throughout the body. In a case clinically designated "fungoid tumor of the shoulder" the autopsy report included a detailed description of the tumor, and an examination of the bones of the region.³³ Several bone samples were macerated to permit closer inspection for signs of decay; abnormal hardening of the liver was also noted. In another case designated "deposit extending from the coccyx to the anus," the autopsy revealed pulmonary tubercles and suppuration.³⁴

Surgical procedures sometimes provided an opportunity for examina-

²⁹ "Journal de l'hospice" (#3).

³⁰ *Ibid.* (#11).

³¹ *Ibid.* (#14).

³² *Ibid.* (#26). Considerable discussion and, initially, disagreement over the diagnosis of this case took place during the consultations.

³³ *Ibid.* (#27).

³⁴ *Ibid.* (#15).

tion of pathological fluids or tissues while the patient was still alive. Thus the examination of a cancerous breast after its amputation included a detailed anatomical description of its various components.³⁵ The weight of the entire mass of tissue and the weight of the cancerous portion dissected away from the skin and fat were recorded. The surgeons of the hospice even attempted a crude chemical analysis. A portion of the cancerous tissue was weighed, placed in a capsule, heated slowly, and then weighed again after it had been dessicated. A later autopsy revealed the direct cause of death to be pulmonary suppuration, but the surgeons took care to inspect the substernal lymph glands for signs of the spread of the cancer.

Although earlier surgeons and physicians, particularly those who worked in hospitals, had described pathological changes, the time they could devote to this subject was usually severely restricted by their responsibilities for the care of patients. Furthermore, prior to about the mid-eighteenth century, the lack of a liberal education put most hospital surgeons at a disadvantage both in writing about their own work and familiarizing themselves with the literature on pathological anatomy.³⁶ By contrast, the surgeons of the hospice were the leading Paris academic surgeons. They had the educational background, the inclination, and, as a result of the unique organization of the hospice, the time and opportunity to study instructive cases in depth.

Aneurysms and their operative treatment received particular attention at the hospice. It was there that Philippe Pelletan performed several operations for popliteal aneurysms.³⁷ His method involved incision and evacuation of the aneurysmal tumor followed by ligation of the artery immediately above and below the aneurysm. Pelletan's

³⁵ *Ibid.* (#25). The patient, a 26-year-old female, entered the hospice on 6 June 1780 with an "ulcerated cancer of the breast" which had begun as a small tumor six years earlier. She was operated on by Tenon, with Desault, Pelletan, Chopart, Bordenave, Louis and others attending. She died on the 16th of June, and an autopsy was performed on the 17th.

³⁶ None of the chief surgeons of the Hôtel-Dieu during the first half of the 18th century received a liberal education. Jean Mery was the only chief surgeon to publish. Barthélemy Saviard (1656-1702), who worked at the Hôtel-Dieu for 17 years, left manuscript notes on his surgical practice. But he had neither the leisure nor, it seems, the education to prepare his work for publication. His *Nouveau recueil d'observations chirurgicales* (Paris, 1702), was edited by another surgeon, Jean Devaux.

³⁷ "Suite de la séance publique de l'Académie Royale de Chirurgie," *Journal de médecine*, 1783, 60. 162. Pelletan reported two successful operations for popliteal aneurysms he had performed at the hospice. See also Philippe Pelletan, *Clinique Chirurgicale* (Paris, 1810), I, 117-136. Pelletan described four operations for popliteal aneurysms he had performed during the 1780s. Three of the operations were done at the hospice.

method, its partial success, and his post-mortem studies helped to strengthen the notion that the great majority of aneurysms were in fact extravasations of blood outside the artery through an opening in the arterial wall; i.e., false aneurysms rather than true aneurysms or dilatations of the artery itself. The Academy of Surgery, or at least its most influential spokesman, Antoine Louis, held this view. In the 1790 public séance of the Academy, Louis praised the studies performed at the hospice, which, he said, had "shed much light on the nature of aneurysms of the popliteal artery."³⁸ He rejected the method employed by John Hunter which involved ligating the femoral artery high above the aneurysm.

Nevertheless, the Hunterian method had its advocates. On 28 March 1792 François Chopart used this technique for the first time in France, and Chopart performed his operation at the hospice of the College of Surgery.³⁹ Although the initial effort failed, Chopart's attempt had a direct influence. Among the surgeons attending the operation at the hospice was Joseph-François Deschamps, who repeated the procedure successfully a few days later and subsequently popularized the Hunterian method in France.⁴⁰

As chief surgeon at the hospice from 1790 until 1792, Chopart also made innovations in orthopedic and plastic surgery. Partial amputation of the foot by disarticulation at the mid-tarsal joints, a technique known since as Chopart's amputation, was developed and first practiced at the surgeons' hospice in 1791.⁴¹ The hospice was the scene for Chopart's improved operations for cleft lip and cancers of the lower lip and chin.⁴² In the latter procedure, he transplanted soft tissue from the neck to fill the space left by partial excision of the chin.

Chopart pursued clinical research while he was chief surgeon at the

³⁸ "Séance publique de l'Académie Royale de Chirurgie," *Journal de médecine*, 1790, 83: 325-327.

³⁹ Joseph-François Deschamps, *Observations et réflexions sur la ligature des principales artères blessées et particulièrement sur l'anévrisme de l'artère poplitée*, 2 ed. (Paris, 1797), p. 39. Deschamps' treatise was first published in 1793.

⁴⁰ *Ibid.*, p. 40. On 10 April 1792, only six days after he attended Chopart's operation, Deschamps successfully performed an operation for popliteal aneurysm using the Hunterian method. Deschamps operated at the Charité hospital where he was chief surgeon. Attending Deschamps' operation were Louis, Chopart, and Pelletan.

⁴¹ Lafiteau, "Observation sur une amputation partielle du pied," *La médecine éclairée par les sciences physiques*, IV, 1792, 85-88. This case history of the first patient on whom the new technique was performed was published by a student of the hospice.

⁴² Lafiteau, "Observation sur un bec de lièvre double." *Ibid.*, pp. 88-89. Lacroix, "Observation sur un cancer à la lèvre inférieure," *Ibid.*, III, 1792, 28-32.

hospice. Using an extremely precise mercury thermometer,⁴³ he measured body temperature at various sites under conditions of rest, exercise, and disease in patients of both sexes and all ages. He studied the physical characteristics and chemical properties of urine in diseases such as urinary calculi, gout, rickets, etc. He tested new remedies for rheumatism and new kinds of surgical dressings for infected gunshot wounds. Chopart's description of his investigations leaves no doubt that he intended to and did, in fact, conduct clinical experiments at the hospice.⁴⁴

It is difficult to evaluate the hospice as a teaching institution. Unlike the research function, which was clearly specified in the founding legislation and subsequent regulations, clinical teaching was not mentioned. A 1778 provisional regulation refers to the selection of "one or several students of the College [of surgery] to stay with the patients on a regular basis and to remain in the hospice during the night."⁴⁵ The chief surgeon's journal mentions the presence of small groups of "students" at operations.⁴⁶ Apparently, the hospice, because of its small size, had only one position for a resident surgical student or *interne*, also known as a student "wearing a *tablier*."⁴⁷ The student "with *tablier*" received room and board at the hospice, assisted the chief surgeon in the daily care of the patients, had to be available for

⁴³ Chopart, *Traité des maladies des voies urinaires*, new ed., rev. (Paris, 1830), I, 25. This work was originally published in 1791. Chopart's thermometer had been made by Mossy, who made thermometers for Lavoisier and other members of the Academy of Sciences.

⁴⁴ Archives Nationales, MS F17A 1094. "Notes des expériences commencées par le citoyen Chopart professeur aux écoles de chirurgie, exchirurgien en chef de l'hospice du Collège de Chirurgie de Paris." Chopart's memoir on his clinical studies at the hospice was submitted in September 1793 after the Committee of Public Instruction had requested the secretary of the recently abolished Academy of Surgery to list the Academy's interrupted experimental work in progress. See below, Appendix (C). Chopart also discussed some of his experiments on body temperature and the properties of urine in his *Traité des maladies des voies urinaires*, I, 25-27, 40-41.

⁴⁵ "Règlement provisoire de discipline . . . dans l'hospice royal," 1778, art. 13.

⁴⁶ "Journal de l'hospice" (##5,19,22).

⁴⁷ "Tablier" referred to a kind of apron worn by surgeons working in hospitals. Tenon used the expressions "portant le tablier" and "sans tablier" in his notes on students he selected for the hospice. *Ibid.*, fols. 76-77. The term "chirurgien élève interne" appeared in reference to the hospice student in "Procès-verbaux de l'Académie Royale de Chirurgie," 17 Jan. 1793. In listing the surgical staff of the hospice in 1788, Tenon mentioned ". . . un élève en chirurgie, et un certain nombre d'autres élèves admis gratuitement pour suivre les opérations, les pansements et les visites." Jacques Tenon, *Mémoires sur les hôpitaux de Paris*, p. 54.

emergency care at all times, prepared bandages, dressings, and simple medicaments, performed autopsies, etc.⁴⁸

In addition to the resident student, a certain number of outside students or students "without *tablier*" had the privilege of attending the hospice. Tenon noted in the daily journal that he admitted eight such non-resident students in 1780 while he was chief surgeon.⁴⁹ They constituted an elite group. Six had distinguished themselves at the College's *école pratique* of dissection and had recommendations from eminent Paris surgeons under whom they had trained. The remaining two were foreigners recommended by important patrons.⁵⁰

Tenon believed that the students, like the consultant surgeons and the patients, should be carefully chosen. In a letter to La Martinière written in 1780, Tenon envisioned the hospice as a training grounds for developing a surgical elite:

... when we have a place to give a young surgeon, it would be awarded only to someone who has attended the hospice. Then we would be certain to place only well-taught men ... and to disseminate the sound principles learned at this hospital ... let us improve the practice of surgery and provide ourselves with successors. There are young people with great promise. We have only to receive them and give them all possible assistance to make their talents bloom. Then they will go on to correct our errors.⁵¹

Besides viewing operations, the hospice students accompanied the chief surgeon on rounds where minor treatment, such as phlebotomies and wound dressings, was performed and prescriptions were ordered. In many cases the surgeons of the hospice treated patients medically, prescribing internal remedies and dietary regimen without consulting medical doctors.⁵² Tenon stated that he made a special effort to direct

⁴⁸ Tenon discussed the duties of the resident student in two letters to La Martinière written 13 June 1780 and 4 July 1780. Bib. de la Fac. de Méd., MS 2275, "2d annexe du journal de l'hospice." Tenon wrote the letters while he was chief surgeon at the hospice. See below, Appendix (B).

⁴⁹ "Journal de l'hospice," fols. 76-77.

⁵⁰ Certificates of recommendation for seven students admitted by Tenon are in Bib. de la Fac. de Méd., MS 2275, "1st annexe du Journal de l'hospice."

⁵¹ "Tenon letter to La Martinière," 4 July 1780, fols. 3,6. See below, Appendix (B). Tenon noted the eagerness of students to attend the hospice and how he, as chief surgeon, selected them on the basis of prior attendance at the College's *école pratique* and recommendations from well-known patrons. *Ibid.*, fol. 3.

⁵² The daily journal frequently referred to dietary therapy and administration of internal remedies—pills, juleps, cinchona bark, etc. For example, the post-operative treatment of a case

the students' attention to "practical points" during rounds. He insisted, over objections from some of his colleagues, that the hospice students be admitted to consultations.⁵³ These provided excellent learning opportunities because it was during the consultations that the professorial staff discussed and, not infrequently, debated the diagnosis and treatment of individual cases. The chief surgeon also presented formal lessons to the students. What emerges then at the hospice of the College of Surgery are some of the elements of a hospital school. In 1788, Pierre-Joseph Desault, the chief surgeon of the Hôtel-Dieu and a former consultant and chief surgeon at the hospice, was to make these elements of clinical teaching available to students on a massive scale.⁵⁴

Public health was another area in which the hospice was innovative. Again, Jacques Tenon played a major role. He directed the hospice's architect on matters relating to hygiene and sanitation.⁵⁵ Tenon believed the hospice gave the surgeons an opportunity "to construct a hospital according to sound principles which could serve as a model."⁵⁶ Although his plans for designing a model hospital were in part thwarted by lack of funds,^{56a} the surgeons' hospice nevertheless had definite advantages over most contemporary hospitals. Its spacious, uncrowded, well-ventilated rooms provided one of the highest ratios of air volume per patient of any hospital in France, an index contemporary reformers of public health believed to be critical for healthy hospitals.⁵⁷ Each patient had his own bed; the iron bedsteads helped prevent bedbugs, and were an advance over the wooden frames in general use.⁵⁸ Two rooms, one for males and one for females, were without beds and were devoted exclusively to surgical operations.⁵⁹ The establishment of

of urinary bladder calculus included purgatives, cinchona bark and other internal remedies. "Journal de l'hospice" (#12). Tenon remarked that the surgeons had complete responsibility for the hospice "comme administrateurs, comme chirurgiens et comme *médecins*" [emphasis mine]. Tenon to La Martinière," 4 July 1780, fol. 6.

⁵³ "Tenon to La Martinière," 4 July 1780, Fol. 5, 3-4.

⁵⁴ Xavier Bichat, "Eloge de P.-J. Desault," *Oeuvres Chirurgicales de P.-J. Desault*, I (Paris, 1798), pp. 24-26, 46-47. See Toby Gelfand, "A confrontation over clinical instruction at the Hôtel-Dieu during the French Revolution," *J. Hist. Med.*, 1973, 28: 268-282.

⁵⁵ Cuvier (note 6 above), p. 95.

⁵⁶ Tenon, *Mémoires sur les hôpitaux*, p. 52.

^{56a} A letter from La Martinière's secretary to a government minister (dated 18 April 1783) strongly and confidently urged that additional funds be provided for the hospice. Archives Nationales O¹ 612.

⁵⁷ *Ibid.*, pp. 54, 183.

⁵⁸ *Ibid.*, p. 54.

⁵⁹ *Ibid.*

separate operating rooms marked an important departure from the practice of all other Paris hospitals and most European hospitals where operations took place in the patients' rooms.⁶⁰ Separate operating rooms had obvious benefits for the surgeon, the patient undergoing surgery, and the other patients. Removal of operations from the wards also facilitated teaching by demonstration, a method Desault later exploited at the Hôtel-Dieu.

The hospice received more than seven hundred patients during its brief life span. About ninety were treated each year beginning in 1786 when all twenty-two beds were ready for use.⁶¹ The mortality—about 14%—was considered quite low for an institution performing major surgical operations.⁶² In 1790, the Committee on Mendicity's report on the Paris hospitals praised the surgeons' hospice for its care of patients and recommended the addition of more beds.⁶³ The hospice continued to function during the early years of the Revolution, remaining financially solvent until the final collapse of the monarchy in late 1792.⁶⁴ Indeed, as late as January 1793, Antoine Dubois was elected to succeed Chopart as chief surgeon.⁶⁵ But in September 1793, the secretary of the recently abolished Academy of Surgery declared that the hospice was almost empty and could no longer receive patients because of bankruptcy.⁶⁶

⁶⁰ *Ibid.*, pp. 225, 228-229.

⁶¹ "Troisième registre du bureau d'administration," *passim*.

⁶² Bib. de la Fac. de Méd., MS 2275, "Exposé des besoins des pauvres malades à l'hospice du Collège de Chirurgie de Paris" [1790].

⁶³ *Procès-verbaux et rapports du Comité de Mendicité de la Constituante, 1790-1791*, ed. Camille Bloch and Alexandre Tuety, *Collections de documents inédits sur l'histoire économique de la Révolution française* (Paris, 1911), pp. 667-668.

⁶⁴ "Troisième registre du bureau d'administration," *passim*. Throughout 1791 and 1792, the financial records of the hospice show an excess of receipts over expenditures. Tenon, in his capacity as a deputy to the National Legislative Assembly, succeeded in having the hospice's 14,000 £ annual government pension classified as a "public expense" and thereby exempted from the general suspension of government pensions on 15 May 1792. *Ibid.* pp. 350-353. Eleven patients were treated at the hospice for gunshot wounds following the 10 Aug. 1792 attack on the Tuilleries, *ibid.*, p. 347. The last entry for a patient to the hospice is dated 13 Oct. 1792.

⁶⁵ "Procès verbaux de l'Académie Royale de Chirurgie," 10 Jan. 1793.

⁶⁶ Archives Nationales, MS, F17^A 1094. Pierre Sue, "Réponses aux questions proposées par le Comité d'Instruction Publique relatives à la ci-devant Académie de Chirurgie," 11 Sept. 1793, fol. 3. During a recent visit to the Archives Nationales in August 1973, I discovered that the hospice was still functioning as late as December 1793. At that time there were 19 patients, but the financial state of the hospice was desperate as a result of the government's failure to pay the annual pension for the preceding three years. See Archives Nationales F 17 1146 dossier 3 and F 17 1284 dossier 4.

Thus the hospice of the College of Surgery did not survive the other medical and surgical institutions of the Ancien Régime. The concept of a small teaching and research hospital as an integral part of a medical school was, however, adopted by the new school set up by the Revolutionary Convention in December 1794. In its objectives, in its bias in favor of surgery, and even in its selection of professors, the hospice of the medical school or *clinique de perfectionnement*, was clearly the successor of the surgeons' hospice.⁶⁷ Apart from this direct legacy, the hospice of the College of Surgery, through its influence on Desault, contributed to the reform of teaching at the major hospital in France—the Hotel-Dieu. Most important, it provided a model in miniature of how a hospital could combine clinical research, teaching, and public health reform with a high quality of patient care. These features along with its specialization in the treatment of surgical diseases and its foundation for and administration by surgeons justified Tenon's description of the hospice as "unique," at least as far as French hospitals were concerned.⁶⁸ In 1817 Georges Cuvier called the small surgical hospital "the first in Paris directed according to scientific principles."⁶⁹ It had given concrete expression to the Enlightenment ideal of a hospital.

APPENDIX⁷⁰

(A) Jacques Tenon to Germain Pichaut de la Martinière, 30 July 1764 (Bibliothèque de l'Académie de Médecine de Paris, Archives de l'Académie Royale de Chirurgie, Carton #10).

à Paris le 30 juillet 1764

Monsieur

Je me suis enfermé aujourd'hui pour songer à nos affaires concernant nôtre

⁶⁷ See Antoine Fourcroy, "Rapport et projet de décret sur l'établissement d'une école centrale de santé, à Paris," 7 Frimaire III [27 Nov. 1794], in *Enquêtes et documents relatives à l'enseignement supérieur, XXVIII, Médecine et pharmacie* (1789-1803), ed. A. de Beauchamp (Paris, 1888), p. 202; "Projet de décret," *ibid.*, p. 210 (art. 9); A. Corlieu, *Centenaire de la Faculté de Médecine de Paris* (Paris, 1891), p. 26.

⁶⁸ Perhaps the closest parallel was an infirmary of six beds established in Edinburgh in 1729 by the College of Physicians. This institution received a charter from King George II in 1736 and became known as the Edinburgh Infirmary, had 200 beds, and clinical lessons were being held. See John D. Comrie, *History of Scottish Medicine*, 2nd ed. (London: Baillière, Tindall & Cox, 1932), II, 450-454 and note 3 above.

⁶⁹ Cuvier (note 6 above), p. 96.

⁷⁰ As much of the material upon which this article is based comes from unpublished sources, I have transcribed in this appendix extensive excerpts from the original French manuscripts. The original spelling has been preserved, but accent marks and punctuation have been modernized.

établissement au Collège d'Inville. . . Dans le moment où le contract de donation [?] du Collège d'Inville sera signé et pas devant, je ferois en sorte de mettre dans l'esprit du roi qu'il seroit de la plus grande utilité qu'il y eut au bout du Collège de Chirurgie un hôpital de chirurgie où il y auroit 12 lits toujours remplis de malades attaqués des faits les plus graves de chirurgie et surtout de plaies d'armes à feu et d'armes blanches à fin d'entretenir en tems de paix un certain nombre de chirurgiens dans l'exercice de la chirurgie militaire. On admettroit dans cet hôpital les maladies chirurgicales de la plus grande difficulté et ce seroit là que l'on feroit des efforts réunis entre les plus sçavants chirurgiens et que la chirurgie pratique cheminerait. Douze chirurgiens habils pourroient être choisis pour les services de l'hôpital, leurs noms mis sur chaque lit répondroient des soins qu'ils prendroient des malades qui seroient confiés à chacun d'eux. La vanité de chacun seroit interessée à ce qu'il fit bien et qui que ce soit n'auroit asses de besogne pour craindre de faire un sacrifice trop considérable de son tems au prejudice de sa fortune. Les chirurgiens des grands hôpitaux voyent trop de malades et n'y pensent point asses. Voilà pourquoi il n'a presque jamais fallu compter sur eux pour les progrès de l'art. Ainsi si la chirurgie n'a point fructifié ou que fort peu dans les mains des chirurgiens des hôpitaux c'est moins une objection à faire contre ce que je dis et contre les chirurgiens d'hôpitaux que contre leurs constitutions actuels en France et surtout à Paris.

Vous admettriez dans cet hôpital de chirurgie vos élèves de l'école pratique; ce seroit encore une récompense de leurs travaux.

Des observations, des tentatives sages, bien faites et mieux faites que jamais il ait été possible d'en faire se verseroient à l'Académie de Chirurgie. Aucun fait n'échapperoit par la facilité et la nécessité qu'il faudroit imposer d'ouvrir. L'école pratique pour la dissection et pour les opérations y gagneroit, l'amphithéâtres y gagneroit aussi pour l'anatomie et les opérations. Quelques jeunes maîtres s'élèveroient plus volontiers à l'anatomie et s'y perfectionneroient enfin. L'hôpital de médecine pratique à Vienne sous la direction de M. Hein [de Haen?] est un exemple à citer. Notre hôpital de chirurgie pourroit être desservi pour les secours spirituels par le curé de St. Côme. . . Je dois passer sous silence beaucoup d'autres avantages que présente ce projet. Le plus considérable que j'y trouve actuellement est la facilité qu'il nous donne de bâtir notre Collège à la faveur de l'hôpital de chirurgie. Jamais nous n'obtiendrons rien de M. l'évêque d'Orléans pour bâtir le Collège de Chirurgie, comme Collège mais si une fois le roi est frappé de l'importance d'un hôpital de chirurgie il nous sera facile d'obtenir 1°. le terrain qui est au bout du Collège d'Inville jusqu'à la rue Haute Feuille où nous mettrions l'hôpital, 2°. des fonds ou quelques bénéfices et l'on est dans l'usage d'en accorder aux hôpitaux en sorte que notre bâtisse pourroit se faire sans qu'il en coûtât rien au roi et sans qu'il parut que l'église donnât rien à des séculiers mais bien à un hôpital. . .

Les ecclésiastiques pourront favoriser votre projet au près du roi par rapport à l'oeuvre pieuse, les militaires par rapport à la chirurgie militaire. C'est pourquoi il ne seroit peut-être point hors de propos de tâter sur cela M. le Grand Aumonier et M. le maal [maréchal] d'Estres. Si étant prévenus et goûtant votre projet, vous parliez

ensuite de cet objet au roi en leurs présence ils ne manqueroient point de l'appuyer les uns et les autres chacun par rapport à ce qui l'intéresseroit. Au surplus il s'en faut de beaucoup que je croye avoir pénétré toutes les vues de bien que ceci peut offrir. J'abandonne le tout à votre prudence et à votre amour pour la perfection de la chirurgie. Je n'ai prétendu tout au plus que vous donner quelque preuves de mon zèle et certainement des assurances du respect avec lequel j'ai l'honneur d'être, Monsieur

Votre très humble et très obéissant serviteur

Tenon

(B) Tenon to La Martinière, 4 July 1780 (Bibliothèque de la Faculté de Médecine de Paris, MS 2275, "2d. annexe du journal de l'hospice").

à Paris ce 4 juillet 1780 8 h[heure] du matin

... Certainement, Monsieur, l'hospice si on veut en saisir tous les avantages doit devenir la source d'un grand bien; voici ce que j'y ai fait, ce que je me propose d'y faire durant que j'en serai chargé. Je le soume[t]s à votre prudence ordinaire, à l'expérience qui dans quelque tems montrera ce qu'il faudra ajouter et réformer, aux bons conseils et aux lumières de mes successeurs que [illegible words] de tout mon coeur à corriger ce que j'aurai fait.

J'ai mis à mes frais un registre pour la distribution des alimens, un autre registre pour les medicamens, un troisième pour les malades venant consulter du dehors ou se faire panser.

le 1^r regle la conduite de l'infirmière, il y a à la tête une instruction où sont tracés ses devoirs, par rapport aux malades à la diete, à la demi portion, à la portion ... le 2^e ou celui de la médication prescrit à l'apoticaire et aux chirurgiens ce qu'ils ont à faire, indique les medicamens que par économie on doit préparer à l'hospice, ceux que l'on a fait à chaque malade. Ces deux registres sont signés tous les matins par le chirurgien en chef. S'il manque au pansement il ne le signe point. On s'assure par là de son assiduité.

Sur le 3^e registre sont portées les observations des malades venant se faire panser du dehors.

J'ai admis M. l'Heritier pour faire les appareils, un autre jeune homme sous lui, M. Oblen pour se former à faire les appareils et veiller dans le cas d'hémorragie à redouter, et de grandes opérations.

Beaucoup de jeunes gens se sont présentés pour me suivre. Je n'ai voulu admettre que ceux qui ayant été reçu à l'école pratique produiroient en outre des attestations de bonne vie et moeurs venant de personnes connues, ce qui excite l'émulation pour entrer à l'école pratique. Si avec cela quand nous avons une place à donner à un jeune chirurgien, on ne l'adonnoit qu'à ceux qui auroient suivi l'hospice, on seroit

sûr de ne placer que des hommes instruits, de faire naître par l'intérêt, une grande émulation, et de repandre les bons principes qui se développeront par la pratique dans cette hospice. Je vous avouerai [avouerai?], Monsieur, qu'en faisant un pansement s'il se présente une [illegible word] de pratique à leur faire sentir, je m'en fais un devoir; et pour les avancer encore plus, je leur ai permis d'assister à nos consultations. J'avoue que sur ce point quelques-uns de mes collègues ont souhaité que l'on suspendit cette bonne volonté. Je m'y suis conformé; cependant je crois les avoir fait revenir sur ce point.

La gloire et le succès de l'hospice est fondée sur la réunion des talents, et de la bonne volonté de MM. les professeurs. Je suis persuadé comme vous, Monsieur, de cette vérité et pour la mettre en pratique je les rassemble tous dès qu'il est nécessaire pour profiter de leurs lumières et de leur conseil. Je leur ai déclaré que je ne me regarderois tant que je serois chargé de l'hospice que comme le ministre de leur délibérations; plus je leur accorde plus je les lie aux intérêts de notre hôpital, plus j'intéresse leur amour propre et puis sensiblement leur bonne volonté au succès de cet établissement, et pour mettre en ceci encore plus de cordialité, j'empêche que personne ne les prisse dans les consultations et fait que chacun y parle à son tour. Je les rassemble chez moi; ils me font l'honneur d'y venir dîner. En les liant ainsi, en établissant une égalité si raisonnable entre gens de lettres, qu'en result-t-il? Que le jour que je fais une grande opération à l'hospice il n'en est presque pas un qui ne revienne une ou deux fois dans la journée revoir les malades auxquels ils se sont attachés par les conseils qu'ils savent qu'ils ont donné pour leurs conservation. . . .

Tout le soin de l'hospice nous étant confié comme administrateurs, comme chirurgiens et comme médecins, il faut donc l'on occupe sous tous les rapports. J'aurai l'honneur de vous informer Monsieur dans la lettre suivante de mes observations à cet égard soumetant le tout à vos lumières.

J'ajouterai avant terminer cette lettre que quelques chirurgiens étrangers demandent à suivre les pansemens et à assister aux opérations qui se font dans l'hospice. C'est une chose que l'on peut accorder avec discretion mais je ne me détermine qu'autant que l'on me présente une attestation en bonne forme de l'ambassadeur de sa nation, attestation que je joins au registre de l'hospice. Vous jugerez mieux qu'un autre, Monsieur, du suite de cette conduite. . . .

Votre très humble et très obéissant serviteur,

Tenon

(C) Chopart: Notes on experiments begun at hospice, September 1793
(Archives nationales F17A 1094).

Rémis au nom de la cy dev^t Acad. de Chirurgie par Chopart

Notes des expériences commencées par le citoyen Chopart, Professeur aux écoles de chirurgie, ex-chirurgien en chef de l'hospice du Collège de Chirurgie de Paris.

Sur la chaleur des parties extérieures du corps de l'homme dans l'état de santé et dans l'état de maladie. Sur la température de l'air qui sort des poumons. Sur la

chaleur des urines et de quelques humeurs excrémentitielles. Sur la chaleur des parties qui ont subi des opérations chirurgicales; par ex. sur la chaleur de la cavité abdominale après l'opération de la hernie, sur la chaleur de la vessie de l'homme après la taille: le thermomètre a été introduit dans la vessie de femmes qui n'y avoient pas subi d'opérations: il a été mis dans le vagin pendant les règles et dans d'autres circonstances.⁷¹ Sur la chaleur du rectum, sur celle du moignon de membres amputés, sur la chaleur du sang qui sort des artères et des veines.

Sur la nature des urines des calculeux, des gouteux, des sujets atteints de rhumatisme, des rachitiques, des vérolés, de ceux qui subissent le traitement antivénérien par les frictions mercurielles. Le résultat de quelques unes de ces expériences se trouve dans le premier volume du traité des maladies des voies urinaires par le c[itoyen] Chopart, imprimé en 1791.

Sur la nature des glaires ou mucosités vésicales que déposent les urines dans l'état de maladie; sur la nature de la matière des gonorrhées et sur celle du sperm de l'homme. Le précis des expériences comparatives sur ces humeurs est rapporté dans le second volume du même ouvrage, qui sera publié dans le mois prochain.

Sur les bains d'eux artificielles de Marrégués, ou chargées de gas hydrogène sulfuré, préparées selon le procédé et sous la direction des citoyens Fourcroy et Vauquelin qui ont été témoins de leur emploi et de leur succès pour la guérison d'affections rhumatismales chroniques, de roideur et d'engorgement de l'articulation du genou. Sur les bains, les douches d'eau de savon et l'application de compresses imbibées de cette eau pour la cure des ulcères avec carie, des engorgemens lymphatiques, à la suite des plaies d'armes à feu. Exemples de guérison de citoyens blessés à la journée du 10 août 1792 aux Thuilleries, et soignés à l'hospice du collège. Sur l'application du cautère actuel dans les caries profondes du l'apophyse mastoïde. Sur l'application du plâtre tamisé, pour la cure des empâtemens du scrotum. Sur différens procédés, opératoires de la taille avec le couteau droit, le gorgeret d'Hawkins et le lithotome caché. Sur la réunion des plaies avec perte de substance de toute la lèvre inférieure et d'une grande portion des parties molles du menton. Sur les injections d'eau chargée de gas hydrogène sulfuré, sur celles de vin pur soit chaud, soit froid, pour la cure de l'hydrocele par épanchement dans la tunique vaginale du testicule. Le c. Chopart a communiqué une partie de ces expériences au citoyen Andouillé qui les a rapportées dans un mémoire en forme de rapport à la ci devant Académie des Science de Paris.

Sur le procédé opératoire de Hunter pour la cure de l'anevrisme de l'artère poplitée. C'est d'après cette expérience tentée pour la première fois à Paris, à l'hospice du collège, que le même procédé a été pratiqué avec succès à l'hôpital de

⁷¹ One of the "other circumstances" was after sexual intercourse. Chopart states in his *Traité des maladies des voies urinaires* (fnt. 43 above), p. 26 that the thermometer was introduced into the vaginas of "a few women, aged between 10 and 30 years, immediately after coitus." [emphasis mine] In some subjects the temperature rose to between 32° and 33° (Réaumur); i.e., 104°-106° Fahrenheit as compared to a normal resting temperature of 30° (99.5° F.). In other subjects the vaginal temperature did not rise.

la Charité. Sur les effets des bougies emplastiques comparativement à ceux des sondes de gomme élastique pour la cure des rétrécissemens de l'urètre, par des brides, des callosités et d'autres vices de ce canal.

Lorsque le c. Chopart aura terminée son ouvrage sur les maladies des voies urinaires dont le troisième volume ne pourra être livré à l'impression que l'année prochaine, il se propose de continuer une partie des expériences notées ci dessus, et celles qu'il a commencées sur la formation du cal dans les fractures avec perte de substance des parties osseuses, sur l'exfoliation des cartilages, sur la cicatrisation des grandes plaies, sur celle des ulcères qui s'ensuivent des plaies d'armes à feu avec délabrement des parties molles, sur les effets de la chaleur ardente et des onctions de corps gras, pour la cure des fausses anchyloses, de la rigidité des articulations des membres; recherches sur l'état des vesicules seminales chez les hommes qui ont subi la castration après l'âge d'adolescence et qui sont morts longtemps après cette opération.

AN ACCOUNT OF THE FOXGLOVE IN AMERICA*

J. WORTH ESTES

Sometime in 1785, Dr. William Withering's *Account of the Foxglove* was published in Birmingham, England. That book, the pharmacological high point of the Age of Enlightenment, was a report of the first large-scale study of any drug in which sound principles of scientific investigation had been employed. Unlike many medical masterworks whose merits have been appreciated only in retrospect, this one excited the medical world as soon as it appeared in the bookshops.

Probably the first American to recognize the importance of Withering's work for his own medical practice was Dr. Hall Jackson of Portsmouth, New Hampshire, who read the *Account* within six months of its publication date. Soon after, he wrote to Withering to request a supply of seeds with which to grow the new wonder drug.¹

Dr. Jackson was well known both as a physician and as a patriot in New England. Born in 1739, he had studied medicine with his father and uncle.² Like most American physicians of the time, he had no university training, although he did spend the year 1762 in London hospitals.³ Upon his return he opened a practice in Portsmouth, a place he thought was as healthy as any in America or the entire world.⁴

Newspapers reported Jackson's amputations of gangrenous limbs,⁵ and his operations for cataract,⁶ much as heart and lung transplants are reported today. His fame as an obstetrician was such that the royal governor of New Hampshire, John Wentworth, felt obliged to employ

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¹ Letter, Hall Jackson to William Withering, 9 Feb. 1786. In: Collection of Withering letters bequeathed to the Royal Society of Medicine, London, by Sir William Osler. An incomplete draft of the letter is in vol. 1 of the Plumer papers at the New Hampshire State Library, Concord.

² *Dictionary of American Biography*, vol. 9 (New York: Charles Scribners Sons, 1932), p. 541.

³ See n. 1 above.

⁴ Letter, Hall Jackson to Jeremy Belknap, 19 Dec. 1789. In: Belknap Collection, Massachusetts Historical Society, Boston.

⁵ *New Hampshire Gazette*, Portsmouth, 4 Mar. 1768; *Essex Gazette*, Salem, Massachusetts, 11-18 Jan. 1774.

⁶ *New Hampshire Gazette*, Portsmouth, 5 Oct. 1770 and 6 Dec. 1771.

Jackson at the birth of his son, although the aristocratic governor later regretted having had such a notorious patriot in his house, one who even joked with the servants.⁷

The only printed work that Jackson is known to have written—and it was published anonymously—was a 28-page monograph on the putrid malignant sore throat.⁸ It was written largely for the parents of children stricken by the concurrent epidemics of diphtheria and scarlet fever that were then spreading through New Hampshire.

Jackson was skilled in what is now called the clinicopathological correlation. For instance, in 1786 he reported, in a letter, on the autopsy of General William Whipple of Portsmouth, a signer of the Declaration of Independence.⁹ The report seems to be the first known description of overriding tricuspid valve.¹⁰ The General had a left ventricular to right atrial communication and tricuspid stenosis, and died in atrial fibrillation and congestive heart failure. Jackson's reasoning about the changes in the patient's circulatory dynamics that must have resulted from the observed anatomic abnormalities indicates that he had an excellent understanding of the physiology of the cardiopulmonary vasculature.

However, his greatest fame was as a smallpox inoculator. Jackson participated in the mass inoculations at Boston in 1764, chiefly at the hospitals at Castle William and Point Shirley in the harbor, but also in a private establishment in Charlestown.¹¹ His success in Boston soon led to his being called to supervise other inoculation programs around New England.¹² The most celebrated hospital under his care was the Essex Hospital on Cat Island in Marblehead Harbor. Opened in late 1773, it was a private profit-making institution, whose proprietors were among the leading patriots of Massachusetts. The hospital met a violent end, only three months after its opening. It was burned down by a group who might now be called the Marblehead Four, at the instigation of the

⁷ C. K. Shipton, *Sibley's Harvard Graduates*, vol. 14 (Boston: Massachusetts Historical Society, 1968).

⁸ Anonymous (Hall Jackson), *Observations and Remarks on the Putrid Malignant Sore Throat* (Portsmouth: John Melcher, 1786). Jackson's authorship of this volume is proved by his inscription of the copy in the American Antiquarian Society to Jeremy Belknap.

⁹ Letter, Hall Jackson to William Plumer, 20 Feb. 1786. In: Vol. 1 of the Plumer letters, New Hampshire State Library, Concord.

¹⁰ Letter, Richard Van Praagh, M.D. to the author, 8 Nov. 1971. In: the author's files.

¹¹ *Boston News-Letter*, 29 March 1764 and *Boston Gazette*, 28 May 1764.

¹² N. Adams, *Annals of Portsmouth* (Portsmouth, N. H.: published by the author, 1825); *Portsmouth Town Records*, vol. 2, New Hampshire State Library, Concord.

local Tories.¹³ Three years later Jackson was invited to Marblehead again, for the same purpose, but this time the invitation came from the town's selectmen, who feared the smallpox epidemics that commonly accompanied the return of revolutionary troops.¹⁴

During the war, Hall Jackson distinguished himself almost as much in the exercise of the arts of war as in his care for the wounded. As an artillery expert, he helped plan and build the defenses of Portsmouth Harbor. When not practicing medicine or marksmanship, he drilled the local militiamen.¹⁵

A committed patriot,¹⁶ Jackson spent several weeks in Cambridge caring for those wounded at Lexington and Bunker's Hill.¹⁷ In the summer of 1775 he just barely lost out to Dr. Benjamin Church of Massachusetts for the job as Director-General of the Medical Department of the Continental Army.¹⁸ That he was even seriously considered for the chief medical position in the newly formed army amply testifies to his professional skills and reputation. Soured at being passed over by the politicians in Philadelphia who had appointed Church, who, in turn, was soon cashiered for suspected treason, Jackson returned to Portsmouth, where he spent most of the rest of the war caring for the troops stationed there.

Although he was sure he would die of his "gout",¹⁹ it was a carriage accident that killed Jackson in 1797,²⁰ at the age of 58. His obituaries

¹³ G. A. Billias, *General John Glover and His Marblehead Mariners* (New York: Henry Holt and Co., 1960). See also *Asbely Bowen's Day Books and Journals*. In: Marblehead Historical Society, Jeremiah Lee House, Marblehead, Massachusetts. Mr. Philip Chadwick Foster Smith, Curator of Maritime History at the Peabody Museum, Salem, Massachusetts, kindly permitted me to use his exacting transcriptions of these materials, which are to be published.

¹⁴ Letters, Hall Jackson to Robert Hooper, Jun., 27 Jun. 1787, and Hall Jackson to Selectmen of Marblehead, 23 Feb. 1788. In: Town Archives, Abbot Hall, Marblehead, Massachusetts.

¹⁵ A. L. Elwyn, ed., *Letters by Josiah Bartlett, William Whipple, and Others* (Philadelphia: Press of Henry B. Ashmead, 1889). I. W. Hammond, ed., *New Hampshire State Papers. Rolls and Documents Relating to Soldiers in the Revolutionary War*, vol. 17 (Manchester: John B. Clarke, 1889).

¹⁶ *Portsmouth Town Records*, vols. 2 and 3, New Hampshire State Library, Concord. Letter, Hall Jackson to the Selectmen of the Town of Portsmouth, 7 Dec. 1773. In: New Hampshire Historical Society, Portsmouth Miscellaneous Town Papers.

¹⁷ Elwyn, *Letters*; also R. L. Jackson, "Dr. Hall Jackson of Portsmouth," *Ann. Med. Hist.*, 1933 (n.s.), 5: 103-128. This paper provides no references to any single statement or quotation in it, and the author has been only moderately successful in locating the original sources for the paper.

¹⁸ Elwyn, *Letters*.

¹⁹ Letter, Judge W. Parker, Exeter, to Hall Jackson, 29 Nov. 1779. In: New Hampshire Historical Society, Mss. file 17B-7. Letter, Hall Jackson to Selectmen of Marblehead, 22 Nov. 1787. In: Town Archives, Abbot Hall, Marblehead, Massachusetts.

²⁰ Adams, *Annals of Portsmouth*.

mentioned his "sprightly talents, lively imagination, and social habits that made him an agreeable companion."²¹ And his headstone prays that "Deeds like thine enthrone thee with the blest."²²

Hall Jackson was a minor figure in that enterprising group of men who comprised the American, and last, phase of the Renaissance. He was an inquisitive, efficient, and knowledgeable physician, in a time and place that required high standards of medical practice. Perhaps more would be known of him today had he not run afoul of the politicians during the Revolution.

He displayed his intellectual capabilities best only after the war, when he introduced digitalis to America. It would have crossed the Atlantic under any circumstance, but not until later, and, as it was, the foxglove was hardly trumpeted throughout the land as a miraculous new scientific breakthrough at the time of its first importation for medical purposes.

In February 1786, Jackson wrote to Dr. Withering to ask for some foxglove seeds, since Jackson did not think that his regular supplier in England would yet find them in the London shops. At the same time, Jackson promised to use digitalis exactly as Withering had recommended in his book.²³ With his reply, written eight months later, Withering sent along more seeds than he thought Jackson would need for himself, in the hope that Jackson would send some to other American physicians.²⁴

Jackson told Withering that none of his acquaintances to whom he had shown Withering's plate of the foxglove had ever seen it in America. However, the plant had been sent across the Atlantic at least fifty years before, although it probably never reached New England. In 1736 Peter Collinson, the English botanist, had sent seeds of the white species to John Custis in Williamsburg.²⁵ And in 1748 the Swedish

²¹ *The Oracle of the Day*, Portsmouth, 30 Sep. 1797; *Columbian Centinel*, Boston, 7 Oct. 1797.

²² J. N. Sewall, *Miscellaneous Poems* (Portsmouth: William Treadwell & Co., 1801). The line quoted is now below ground level on the headstone in North Cemetery in Portsmouth.

²³ Letter, Jackson to Withering (n.1 above).

²⁴ Letter, William Withering to Hall Jackson, 27 Oct. 1786. In: The Francis A. Countway Library of Medicine, Boston, Massachusetts. Although knowledge of this letter survived in portions of it which had been reprinted largely because of Dr. Jackson's efforts to disseminate Withering's work, it was discovered, in its original state, in February 1971, among the family papers of Mrs. Henry B. Shepard of West Newton, Massachusetts, having descended to her through her great-grandfather Dr. William Perry of Exeter, New Hampshire. It is not known precisely how they came into Dr. Perry's possession, perhaps through a friend who also knew Dr. Jackson.

²⁵ E. G. Swem, ed., *Brothers of the Spade* (Barre, Mass.: The Barre Gazette, 1957).

naturalist Peter Kalm noted in his diary that he had seen the purple species near Philadelphia.²⁶ But in both instances it is clear that the foxglove had first come to America only as an ornamental garden plant.

Hall Jackson tried to comply with Withering's request that he distribute foxglove seeds throughout the country. Withering had especially asked that some be sent to his old friend Dr. Walter Jones of Virginia. No traces of any correspondence between Jackson and Jones can yet be found, but there are definite trails of foxglove seeds from Portsmouth to other places.

During the week after he received Withering's reply in April, 1787, Jackson wrote to several leading American scientists—not just to physicians—to send them, in turn, packets of the precious seeds, and extracts from Withering's letter or book. One of those favored with such a gift was the Reverend Ezra Stiles (1727-1795), who was then president of Yale College, but who had recently been a pastor in Portsmouth.²⁷ Stiles caused Jackson's letter,²⁸ which contained quotations from Withering's letter, to be published in a journal called the *American Museum*.²⁹

Closer to home, Jackson's efforts to convince his colleagues of the new drug's usefulness can be traced in some detail among the letters of Dr. Edward Augustus Holyoke (1728-1829) of Salem, Massachusetts.³⁰ Holyoke was then President of the Massachusetts Medical Society, and it had been during his first term in that office that Jackson had been made an honorary member of the Society. Holyoke, his protégé Dr. Nathaniel Walker Appleton (1755-1795) of Boston, who was secretary of the Society, and Jackson corresponded about the foxglove for six years.

However, Holyoke and Appleton remained unpersuaded of the foxglove's merit. They were unwilling to accept digitalis into their practices without some dramatic proof, even in the face of the solid clinical evidence presented by Withering. Holyoke was long famous for

²⁶ A. B. Benson, ed., *Peter Kalm's Travels in North America* (New York: Dover Press, 1966).

²⁷ Adams, *Annals of Portsmouth*.

²⁸ Letter, Hall Jackson to Ezra Stiles, 30 Apr. 1787. In: Beinecke Rare Book and Manuscript Library, Yale University, New Haven, Connecticut.

²⁹ Cited in: A. Malloch, *Medical Interchange Between the British Isles and America Before 1801* (London: Royal College of Physicians, 1946).

³⁰ Manuscripts and letters of Edward Augustus Holyoke in the James Duncan Phillips Library of the Essex Institute, Salem, Massachusetts. Vol. 2, *passim*.

relying chiefly on only four drugs—mercury, antimony, opium, and quinine—for all his patients' problems.³¹

In July 1790, Jackson sent Holyoke eleven case reports of dropsical patients whom he had treated with foxglove, and in whom he had achieved about the same cure rate as had Withering, but Holyoke was still dubious.³² He and Appleton debated whether they would present Jackson's findings to the April 1791 meeting of the Medical Society, but they appear not to have done so.

Holyoke was never fully convinced of the new drug's usefulness, although Dr. Isaac Rand of Boston later used it successfully in the treatment of Holyoke's own daughter—who had consumption, not dropsy.³³ Altogether, relatively little attention was paid to digitalis in the Boston area in the first years after its importation.

There is no way to trace all the routes by which digitalis first spread throughout the medical profession in America. Even Jackson's own prestige in New England was insufficient to counteract Holyoke's reluctance to use digitalis, since Holyoke's reputation was greater than Jackson's. Some physicians in the middle Atlantic states first learned about the use of digitalis in the treatment of dropsy from Erasmus Darwin's article which was published a year before Withering's book appeared.³⁴ Darwin wrote his paper partly to discredit Withering's priority of discovery of the medical virtues of the foxglove, since Darwin maintained that he and his son, who had died recently, were the first to introduce digitalis to medicine. In his book,³⁵ Withering put the story straight, but at least Darwin's enthusiastic paper did help introduce the foxglove to some American physicians.

Digitalis was included in lectures on materia medica at American medical schools from at least 1800 on.³⁶ It is likely that such formal

³¹ S. W. Williams, *American Medical Biography* (Greenfield, Mass.: L. Merriam & Company, 1845).

³² Holyoke Manuscripts (n. 29 above).

³³ *Ibid.*

³⁴ E. Darwin, "An account of the successful use of foxglove in some dropsies, and in the pulmonary consumption." *Med. Trans. Royal Coll. Phys. London*, 1785, 3: 255-286.

³⁵ W. Withering, *An Account of the Foxglove* (Birmingham: M. Swinney, 1785). An analysis of the quantitative aspects of Withering's data may be found in: W. J. Estes, and P. D. White, "William Withering and the purple foxglove," *Scientific American*, June, 1965, 212: 110-119. Details of the controversy may be found in this paper, in Case IV of Withering's book, and in: T. W. Peck and K. D. Wilkinson, *William Withering of Birmingham* (London: Simpkin Marshall, 1950).

³⁶ B. S. Barton, *Elements of Botany*, 3d ed. (Philadelphia: Robert Desilver, 1827). B. A. Smith, "Notes on the materia medica of Nathan Smith," *Yale J. Biol. & Med.*, 1939, 11: 189-205.

teaching was much less important than word of mouth among non-university physicians as a vehicle for spreading knowledge of the drug throughout the profession. Medical texts for home use³⁷ and books on medical botany³⁸ were among the other teaching aids that publicized the virtues of digitalis.

The continuing availability of European medical literature somewhat diluted the need for homegrown research in the earliest years of the new republic. At its best, eighteenth-century clinical research generally resulted only in anecdotal data, rather than quantitative data, which were very scarce. Even then, investigators could not always interpret the quantitative data they did collect correctly, for a variety of reasons.

The first experimental observations of the effects of single doses of digitalis on the pulse rate in man were performed in the year 1800 by a medical student, John Moore (1778-1836), at the University of Pennsylvania.³⁹ Moore looked at his data (Fig. 1)—although he presented them in paragraph form, since graphing was not yet a common technique—and interpreted them as demonstrating that digitalis stimulates the arterial system, because it increased the pulse rate in six of his eight experiments.

Another student at Pennsylvania, Lewis Burwell (1783-1826), performed two experiments of his own (Fig. 2) five years later.⁴⁰ Upon then finding Moore's published data, Burwell decided that no further experiments were necessary, because the data he had already obtained were consistent with Moore's. He, too, naturally concluded that digitalis was a stimulant of the arterial system.

And six years later still, in 1811, a student at Columbia, Thomas Edward Steell (ca. 1785-1818), took a second look⁴¹ at Moore's data (Fig. 1). He interpreted them not as showing that digitalis was a stimulant, but that it was a sedative, of the arterial system, because the pulse decreased after its initial rise. Steell also pointed out that Moore's conclusions were less consistent with his data than they were with his

³⁷ See, for instance, J. Ewell, *The Planter's and Mariner's Medical Companion* (Philadelphia: John Bioren, 1807).

³⁸ See, for instance, W. Woodville, *Medical Botany*, 4 vols. (London: James Phillips, 1790-94).

³⁹ J. Moore, *An Inaugural Dissertation on Digitalis Purpurea . . .* (Philadelphia: Way & Groff, 1800).

⁴⁰ L. Burwell, *Observations on the Digitalis Purpurea . . .* (Philadelphia: printed for the author by Hugh Maxwell, 1805).

⁴¹ T. E. Steell, *An Inaugural Dissertation on the Use of the Digitalis . . .* (New York: T. & J. Swords, 1811).

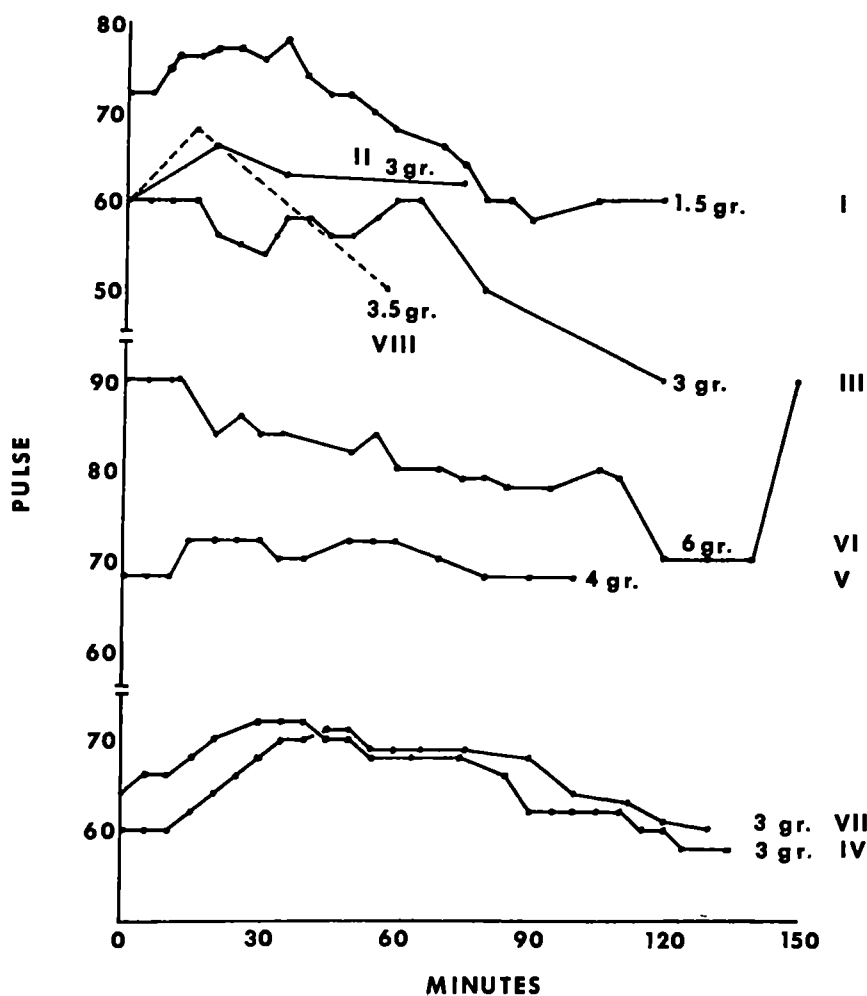


FIGURE 1.

Effects of digitalis on the pulse in eight experiments by medical student John Moore in 1800.

expressed desire to conform with the teaching of his professor of materia medica, Benjamin Smith Barton, who postulated that digitalis was a stimulant of the arterial system.

In evaluating their perceptions of their own data, it must be kept in mind that all three student investigators were unaware of the compensatory reflexes that help regulate the pulse rate. If it were

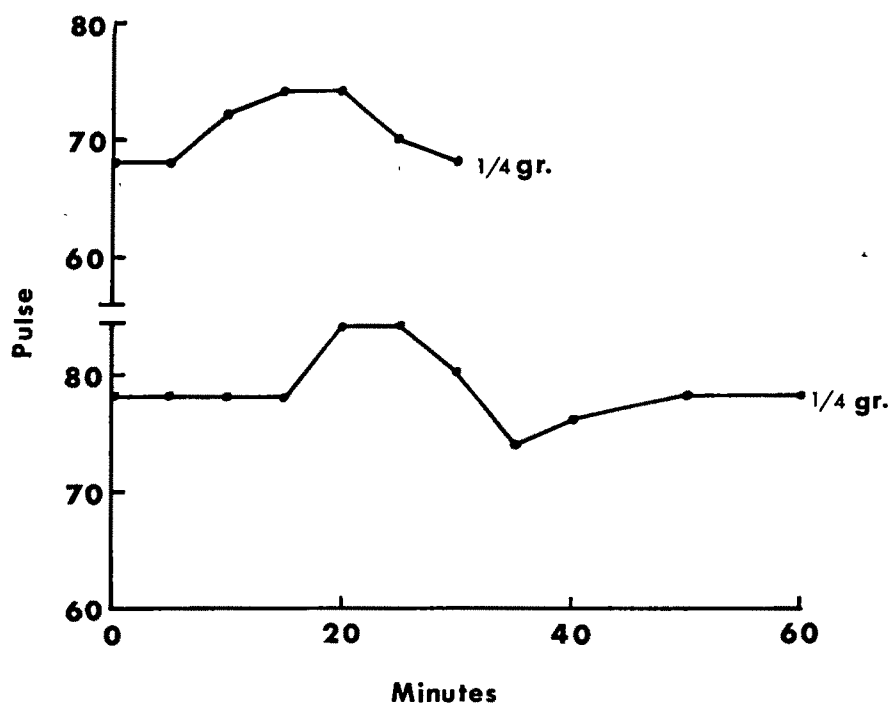


FIGURE 2.

Effects of digitalis on the pulse in two experiments by medical student Lewis Burwell in 1805.

possible to subject the pulse data to appropriate analysis, they would probably fail to show any digitalis effect as we now understand it. Only if the students had been able to estimate cardiac output might they have answered their questions.

At about the same time, two Royal Naval surgeons in England reported the first long-term quantitative observations of the effects of continuous digitalis administration. Dr. John Penkivil presented data⁴² relating daily doses of digitalis to pulse rate in one patient (Fig. 3). Because a daily dose of about 90 drops of tincture of digitalis did not lower the pulse below about 90 a minute, Penkivil could only conclude that the beneficial effect of digitalis in his patient was not the result only of its effect as a sedative of the arterial system. However, if he had known how to graph his data, he might have seen that he could have

⁴² J. Penkivil, "On digitalis," *Med. & Phys. J. London*, 1800, 3: 315-321.

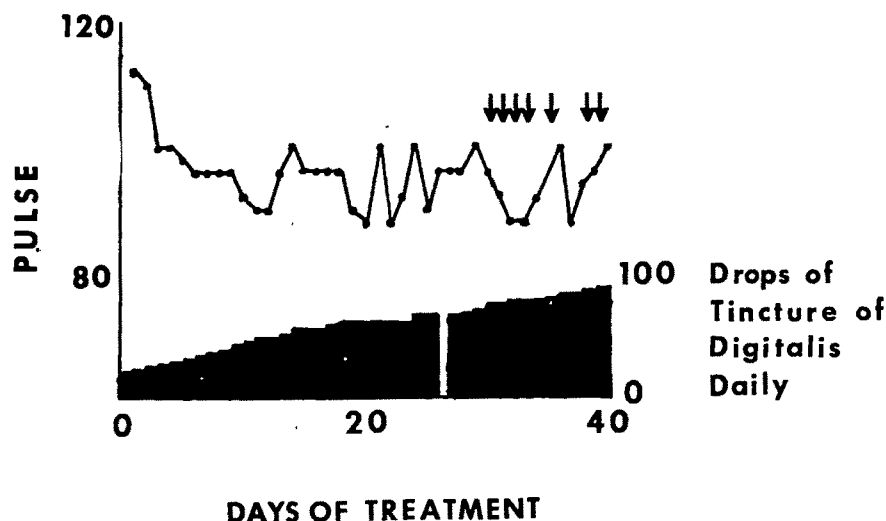


FIGURE 3.

Daily dose of digitalis administered by Dr. John Penkivil in 1800 to his patient, and the patient's pulse and episodes of nausea and vomiting (indicated by vertical arrows).

achieved slowing of the pulse without having to give doses large enough to induce vomiting, since the maximum effect on pulse rate occurred at doses of 50 to 60 drops, whereas vomiting did not occur until the dose had been increased to about 80 drops a day.

Dr. James Magennis presented the most detailed observations on the clinical use of digitalis in one patient in the drug's first 35 years. Magennis listed the dose administered to his patient each day, three times a day, the patient's pulse every morning, afternoon, and evening, and the occurrence of side effects, all over a period of 108 days (Fig. 4). He was astonished at the extent of the drug's effect on the pulse, since it was not then generally recognized that a pulse of only 40 in a minute was still compatible with life. The graph also shows why Magennis could conclude that the pulse is "exquisitely susceptible of being roused into action on the slightest bodily exertion."⁴³ He was right, but, like the student investigators, he was unaware of the compensatory reflexes that regulate the pulse.

The report of the largest clinical trial of digitalis in patients with dropsy, after Withering's initial study, was that of Dr. L. Maclean in

⁴³ J. Magennis, [On the effects of digitalis], *ibid.*, 128-135.

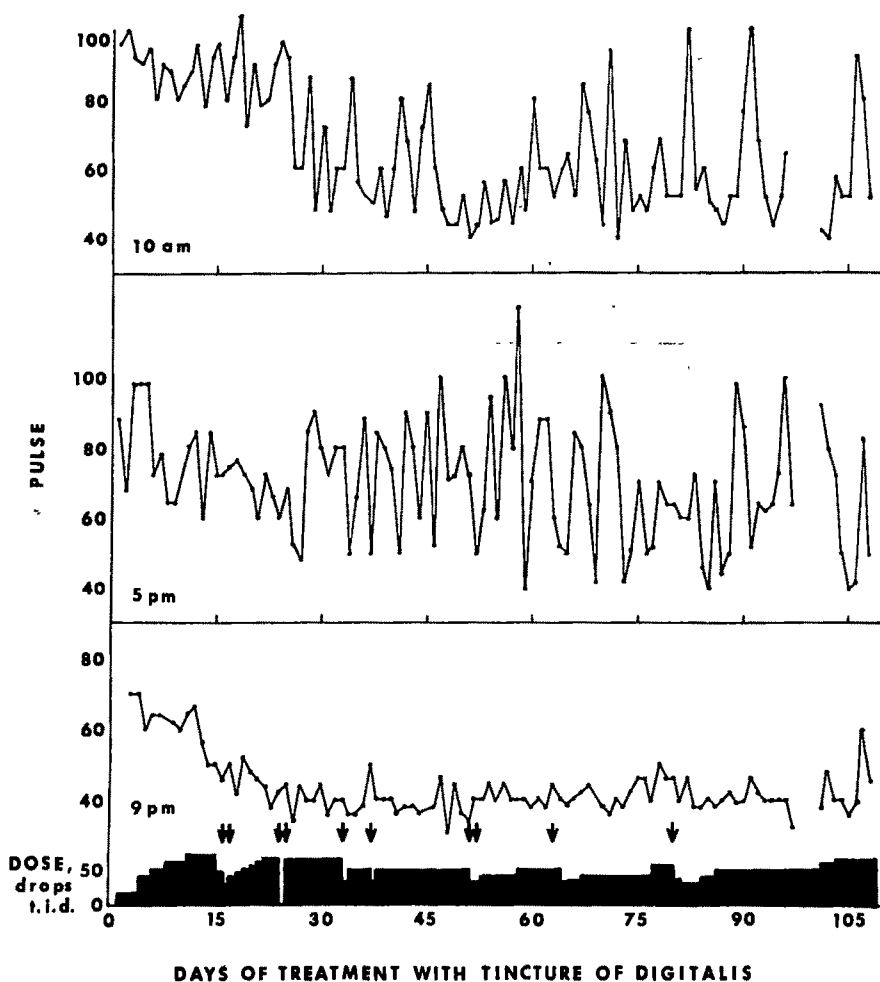


FIGURE 4.

Dose of digitalis administered by Dr. James Magennis in 1800, at 8 a.m., 1 p.m., and 7 p.m. daily, to his patient, and the patient's pulse at 10 a.m., 5 p.m., and 9 p.m. Episodes of nausea and vomiting are indicated by vertical arrows.

England, who reported on 72 patients with hydrothorax⁴⁴ (see Table 1). Of those whom he treated with digitalis, symptoms disappeared in 83%. Of those who were not treated, for various reasons, only 8% experienced any relief of symptoms. The table also shows that Maclean, whose book was, like many other English medical works, reprinted in

⁴⁴ L. Maclean, *An Inquiry into the Nature, Causes, and Cure of Hydrothorax* [1810]. 1st American edition (Hartford, Conn., 1814).

TABLE 1

Incidences of therapeutic success and side effects attributable to digitalis, 1785-1816, and in 1971.

	Digitalis Preparation	Number of Patients	Therapeutic Success Rate	Incidence of Side Effects
WITHERING* (1785)	Decoction	15	80%	55%
	Dried Leaf	35	77%	14%
	Infusion	78	69%	19%
JACKSON† (1791)	Infusion	11	73%	9%
MACLEAN‡ (1810)	Infusion	64	83%	16%
FERRIAR§ (1816)	Not specified	23	44%	9%
BELLER, <i>et al.</i> # (1971)	Leaf and Pure Glycosides	135	100%	23-29%

* See n. 35.

† See n. 30.

‡ See n. 44.

§ See n. 47.

See n. 48.

America, achieved therapeutic success, and observed side effects, in about the same proportions as had Withering,⁴⁵ and Jackson, in his report to Holyoke.⁴⁶ A little later John Ferriar's similar results were reprinted in Philadelphia.⁴⁷ Even with our improved methods for detecting the occurrence of side effects, such as the electrocardiograph, the reported incidence of digitalis toxicity has not changed much over the past 180 years.⁴⁸

Books and papers about digitalis accumulated,⁴⁹ between 1785 and 1820, at the same rate as materials about cardiovascular drugs do now,⁵⁰ with a doubling time of 7 to 8 years (Fig. 5). Although less than 10% of the publications about digitalis were by Americans, those

⁴⁵ Withering, *Account of the Foxglove*.

⁴⁶ Holyoke Manuscripts.

⁴⁷ J. Ferriar, *Medical Histories and Observations*, 1st American edition. (Philadelphia: Thomas Dobson, 1816).

⁴⁸ G. A. Beller, *et al.*, "Digitalis intoxication." *New Engl. J. Med.*, 1971, 284: 989-997.

⁴⁹ *Index-Catalogue of the Library of the Surgeon-General's Office*, vol. 3 (Washington, D.C., Government Printing Office, 1882), s. v "Digitalis."

⁵⁰ R. H. Orr and A. A. Leeds, "Biomedical literature: volume, growth, and other characteristics," *Fed. Proc.*, 1964, 23: 1310-1331.

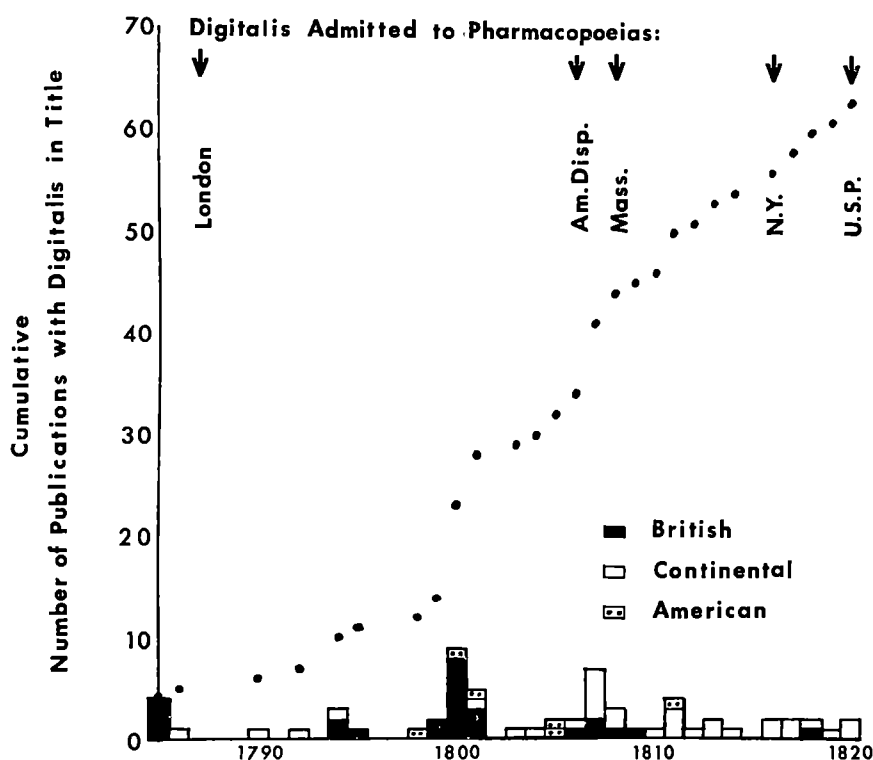


FIGURE 5.

Accumulation of literature about digitalis published over the first thirty-five years after publication of Withering's work, and the years in which digitalis was admitted to the earliest American pharmacopoeias (arrows). These data do not include publications in which digitalis was discussed but in which the name of the drug was not mentioned in the titles.

from all over Europe were known to American physicians, and were cited by them. As we have noted, many English works were, in fact, reprinted on this side of the Atlantic.

It is probably erroneous to assume that digitalis gained its official status in America, admission to the first *United States Pharmacopoeia* in 1820, only because of its virtues as extolled in the medical literature. Rather, it was included in the *U.S.P.* simply because it had already been listed in the pharmacopoeias of Edinburgh (1783), and then of London (in 1786), as a direct result of Withering's clear demonstration of its therapeutic value. His work alone provided all the proof of efficacy and evidence of safety that were needed for the admission of digitalis to medical practice, two centuries before those criteria were made legal prerequisites for the use of any drug.

As Table 2 shows, the frequency with which dropsy was diagnosed in England and America from 1583 to 1821, in about 3 per cent of deaths, is about the same as the frequency with which congestive heart failure has been diagnosed in the past few years. Dropsy was no more or less prevalent among Jackson's and Withering's patients than among those of modern physicians.

TABLE 2

Frequencies with which dropsy (congestive heart failure) was diagnosed as the cause of death in several populations through 1820, and again in 1971. Data from: L. Spalding and J. Thurston, *Bills of Mortality for Portsmouth*; L. Shattuck, in *Boston Registry Department Bills of Mortality 1810-1849*, City of Boston, 1893; W. Barton, *Trans. Am. Philosoph. Soc.*, 1793, 3:25; E. B. Krumbhaar, *Yale J. Biol. & Med.*, 1947, 19:801; R. Hart, *English Life in the Eighteenth Century*, New York: Putnam's, 1970; T. R. Forbes, *Chronicle from Aldgate*, New Haven: Yale, 1971; and McKee *et al.*, *New Engl. J. Med.*, 1971, 285:1441.

PORTSMOUTH, N. H., 1801-20	in 3.32% of 1,654 deaths
CONCORD, N. H., 1819-21	in 4.62% of 108 deaths
MASON, N. H., 1798-1805	in 2.45% of 122 deaths
Twenty Towns in NEW ENGLAND, 1806	in 4.91% of 224 deaths attributed to specific causes
LONDON, St. Botolph Parish, 1583-99	in 0.94% of 4,253 deaths, and in 1.29% of deaths not attributed to plague
SALEM, Mass., 1786	in 2.87% of 139 deaths
BOSTON, Mass., 1811-20	in 2.29% of 8,491 deaths
PHILADELPHIA, Penna., Christ Church Parish, 1746-75	in 3.11% of 1,798 deaths
LONDON, 1770	in 4.47% of 21,463 deaths
FRAMINGHAM, Mass., 1971	in 3.05% of 5,209 people aged over 30

The first experiments with digitalis in animals were those of Dr. François Salerne of Orleans in 1748.⁵¹ However, his only object was to ascertain whether it was true that foxglove leaves could be toxic to poultry, a point which his data did confirm. Not until about 1800 did Thomas Beddoes in Shropshire perform the first animal experiments with sublethal doses of digitalis, experiments which are especially

⁵¹ [F.] Salerne, "Observation de botanique," *Hist. de l'Acad. Roy. des Sciences*, 1748, pp. 84-85.

notable because he used both positive and negative controls.⁵² Beddoes' observations on frogs convinced him that the drug was a stimulant of the whole body, including the arterial system, much as John Moore and Lewis Burwell had concluded from their experiments in man. However, Beddoes' data, which are anecdotal in form, also are such that that was the only possible conclusion an eighteenth-century physician could have drawn from them. It has been said⁵³ that Beddoes, whose books were widely read and reprinted in America, was the main promoter of the use of digitalis for consumption, and that Beddoes was, therefore, acting unscientifically, because digitalis is now known to be specific for heart disease.

But it was clearly impossible, even in retrospect, for Withering, Jackson, Beddoes, and their contemporaries, to have been able to discover, much less read from a book, that digitalis is specific for congestive heart failure. In fact, the heart was not then thought to be a common site for functional disease. Withering, of course, had thought that digitalis was a diuretic.

Harvey's discovery 175 years before, that the blood circulates continuously within a closed system, had not much helped late eighteenth-century patients, as even Thomas Jefferson realized.⁵⁴ In fact, Harvey's discovery had made it possible to conceive of dropsy and consumption in similar ways. Eighteenth-century physicians thought that dropsy resulted when the vascular fibers became weak, from any of several causes, and such weakened fibers could not resorb accumulations of fluid from within the tissues. Similarly, consumption was thought to be the result of a weakness that made it difficult to resorb the necrotic lesions in the lungs.

Hall Jackson in America and William Withering in England, and their colleagues on both sides of the Atlantic, could only apply the best physiological and therapeutic principles available to them, like conscientious physicians of any century. It was to be another century before digitalis could take its proper pharmacological place in medical therapeutics. We do not yet have all the answers, but Withering's book still contains all those that count for the patient, as Dr. Jackson recognized when he first imported the foxglove to America.

⁵² T. Beddoes, *Observations on the Medical and Domestic Management of the Consumption* (London: Longmans, 1801. Reprinted in America at Troy, N.Y., by O. Penniman, 1803).

⁵³ E. H. Ackerknecht, "Aspects of the history of therapeutics," *Bull. Hist. Med.*, 1962, 36: 389-419.

⁵⁴ M. B. Strauss, ed., *Familiar Medical Quotations*. (Boston: Little, Brown, 1968).

MEDICAL HISTORICAL NEWS AND ACTIVITIES

CORRESPONDENCE AND REPORTS

ALPHA OMEGA ALPHA PROGRAM OF AUDIOVISUAL MEMOIRS OF LEADERS IN AMERICAN MEDICINE

Alpha Omega Alpha, the national medical honor society, was founded in 1902 in Chicago by five medical students led by William Webster Root. The name of the society is taken from the key Greek words for the society's precept: "Worthy to serve the suffering." The society has ninety-seven chapters in medical schools in the United States and Canada and publishes a quarterly journal, *The Pharos*. It awards fifteen visiting professorships each year to advance academic excellence.

In 1967 the late Professor David E. Seegal and his wife, Professor Beatrice Carrier Seegal, both on the faculty of Columbia University College of Physicians and Surgeons, suggested that Alpha Omega Alpha establish a program to record on videotape the memoirs of leaders in American medical science. They accompanied their proposal with a benefaction to assist in the development of the program.

Since the Seegals were the inspiration for the program, a note on their motivation is relevant—and instructive. Some years ago, David Seegal had attended a Johns Hopkins Medical School alumni dinner at which a film was shown of the late William Henry Welch. In it, Welch told the story of the development of medical education at Hopkins. This brief encounter with Welch made a lasting impression on Seegal. In his words, "One could almost feel the warm rapprochement between the men in the room and the man on the screen. Members of the audience, some of whom had known Dr. Welch, were transported from the usual climate of a class reunion to a serious, thought-provoking and rewarding encounter with a great individual" (D. Seegal, "Videotaped autobiographical interviews, an adjunct for medical education." *J.A.M.A.*, Feb. 21, 1966, 195: 652).

David and Beatrice Seegal's interest in videotaped autobiographical interviews was heightened when, as part of the Brandeis University program, David was the subject of such an interview by several of his former students. The Seegals became convinced that audiovisual histories offered a unique means of extending the educational reach of a great teacher far beyond his or her own institution. They felt that the

concept of oral history should be modified and expanded by the adoption of the videotaped interview. The process would, of course, require the participation of a perceptive interrogator who would "come across" on television, preferably someone who also had first-hand familiarity with the career of the subject.

In their advocacy of audiovisual interviews, the Seegals were building on the oral history program at Columbia University which had been inspired by Allan Nevins and carried on by Saul Benison. It had led to the oral history program of the National Library of Medicine conducted by Peter D. Olch. The Seegals were also familiar with the audiovisual project at the New York State Psychiatric Institute in New York City to interview eminent psychiatrists.

With the inspiration and firm backing of the Seegals, I, as president of Alpha Omega Alpha, approached Martin M. Cummings, Director of the National Library of Medicine, and received his enthusiastic endorsement for the use of the superb staff and facilities at the National Medical Audiovisual Center in Atlanta, Georgia.

The first recording, made on November 5, 1970, was an interview with A. Baird Hastings, formerly Hamilton Kuhn Professor of Biochemistry at Harvard, by Peter Olch. (As of July 1, 1973 a total of ten programs have been completed—see appended list, p. 412.)

The concept of these programs is not the same as the comprehensive "oral history" program carried out by Nevins and Benison. Indeed, in preparing a subject for an interview we request him *not* to recite a detailed account of his life. Instead we ask for an emphasis on the key points in his academic career; significant influences of persons and events; his major contributions to medicine and medical science; and the ebb and flow in his major discipline during his career. A principal challenge is to compress this information into a one-hour program.

The selection of the men and women to be interviewed is made by Alpha Omega Alpha and is based on excellence. Thus far we have had only two declinations, in both instances because the subject felt he would not be effective on television.

The teacher-scientist is encouraged to select as his or her interviewer an individual with those characteristics we agreed on with the Seegals: first-hand knowledge of the individual's career and an ability to project himself on television. Since the interviewer has usually had a close and extended contact with the scientist, he plays a more active role than that of the usual interrogator.

In preparing for a film, the subject and his interviewer are shown one

or more previous films that are considered to be most representative of the goals of the program.

It is not intended to restrict the program to medical scientists who have retired, or are approaching retirement, although that was the emphasis at the beginning. Interviews will be conducted with younger men and women whose reminiscences may be richer and more disciplined. This approach may lead to the intriguing opportunity to ask for a second or third interview as the scientist approaches the end of his or her career—or at specific points in the course of his career.

As with other archival and educational resources, effective utilization of the films as both teaching aids and as historical sources is the next indicated step in the development of the program.

After three years and ten recordings, the program is now on a firm base and we plan to expand the program to six recordings a year. The contribution of the staff of the National Medical Audiovisual Center cannot be overestimated.

Given an eminent leader and a perceptive interrogator, such films may not only be educational aids and archival deposits, but unique sources of inspiration for younger men and women in building their careers.

John Z. Bowers, M.D.
President
Alpha Omega Alpha Honor Medical Society

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MEMOIRS OF LEADERS IN AMERICAN MEDICAL SCIENCE

<i>Subject</i>	<i>Interviewed By</i>
Lester R. Dragstedt, M.D., Ph. D. Professor of Surgery Emeritus The University of Chicago The Division of the Biological Sciences and The Pritzker School of Medicine	John Landor, M.D. Professor of Surgery University of Florida, Gainesville College of Medicine
A. Baird Hastings, Ph.D. Hamilton Kuhn Professor Emeritus of Biochemistry Harvard Medical School	Peter D. Olch, M.D. Deputy Chief History of Medicine Division National Library of Medicine
Charles Huggins, M.D. Wm. D. Ogden Distinguished Professor Emeritus of Surgery The University of Chicago The Division of the Biological Sciences and The Pritzker School of Medicine	Leon O. Jacobson, M.D. Dean, The University of Chicago The Division of the Biological Sciences and The Pritzker School of Medicine
Walsh McDermott, M.D. Livingston Farrand Professor of Public Affairs in Medicine Cornell University Medical College	David E. Rogers, M.D. President The Robert Wood Johnson Founda- tion
Owen H. Wangenstein, M.D. Regents' Professor of Surgery University of Minnesota Medical School	K. Alvin Merendino, M.D. Chairman, Department of Surgery University of Washington School of Medicine
W. Barry Wood, Jr., M.D. (deceased) Professor of Microbiology The Johns Hopkins University School of Medicine	Robert J. Glaser, M.D. President The Henry J. Kaiser Family Founda- tion
John H. Enders, Ph.D. Professor of Microbiology Emeritus Harvard Medical School	Frederick C. Robbins, M.D. Dean, Case Western Reserve University School of Medicine
Leo G. Rigler, M.D. Professor of Radiology in Residence University of California School of Medicine at Los Angeles	Harry Z. Mellins, M.D. Professor of Radiology Harvard Medical School

Shields Warren, M.D.
Professor of Pathology
Emeritus Harvard Medical
School

John Z. Bowers, M.D.
President
Josiah Macy, Jr. Foundation

Joseph T. Wearn, M.D.
John H. Ford Professor of Medicine
Emeritus and Dean Emeritus
Case Western Reserve University
School of Medicine

T. Hale Ham, M.D.
Director, Division of Research in
Medical Education
Case Western Reserve University
School of Medicine

NOTE: Several of the films are available in color but the majority are in black and white. They may be obtained by sending a blank, sixty-minute tape to:

Videotape Duplicating Service
National Medical Audiovisual Center
1600 Clifton Road, N. E.
Atlanta, Georgia, 30333

ANNOUNCEMENTS

AMERICAN ASSOCIATION FOR THE HISTORY OF MEDICINE

*Committee Chairman, 1973-1974.**Nominating Committee**Editorial Committee**Osler Medal Committee**Welch Medical Committee**Garison Lecture Committee**Ad Hoc Committee on Historical Translations**Loeb Library Committee**Semi-Centennial Committee**Program Committee (1974)**Local Arrangements (1974)**Delegate to the Société Internationale d'Histoire
de la Médecine*

James Harvey Young

James H. Cassedy

Chester R. Burns

Gunter B. Risse

Saul Jarcho

George Mora

Saul Jarcho

Whitfield J. Bell, Jr.

Gert H. Brieger

J. I. Waring

Genevieve Miller

NATIONAL NEWS

American Institute of the History of Pharmacy

At the annual meeting of the AIHP in Boston, July 25, 1973, Professor John Parascondola of the University of Wisconsin School of Pharmacy was elected and installed as third Director, succeeding Professor Glenn Sonnedecker who served the AIHP for twenty-four years, first as Secretary then as Director. Dr. Parascondola received his Ph.D. in the history of science at Wisconsin in 1968 and joined the Wisconsin faculty in 1969. As Director he will continue the tradition of administering the historical and publishing activities of the Institute from the University of Wisconsin School of Pharmacy and will share with Dr. Sonnedecker, who continues in his faculty activities, teaching responsibilities for courses in the history of pharmacy and pharmacology.

Boston University School of Medicine

Professor Glenn Sonnedecker presented a paper on "The Rise and Demise of a Concept of Addiction." The lecture, given on July 25, 1973, was co-sponsored by the Department of Pharmacology and the Committee of the History of Medicine.

To mark the School of Medicine's one-hundredth anniversary, a series of lectures, "7 on 100," will be sponsored by the Ad Hoc Committee on the History of Medicine. The lectures, seven in all, are to be held at noon on Wednesdays, October 24 and 31, November 7, 14 and 28, and December 5 and 12. The series

probes the social and philosophical background leading to the School's function as a homeopathic institution founded upon the base of a female medical college. They also focus on the impact of society's attitudes toward clinical research, drugs, and the current political situation as the School of Medicine faces its new association with Boston City Hospital.

Cheiron: International Society for the History of Behavioral and Social Sciences

The Society will hold its sixth annual meeting at the University of New Hampshire, May 31-June 2, 1974. Those wishing to submit papers (deadline February 1, 1974) or obtain additional information should write to Dr. Rand B. Evans, Department of Psychology, University of New Hampshire, Durham, New Hampshire, 03824.

Chicago

The History of Dermatology Club will hold its first meeting in Chicago on December 5, 1973. Dr. Marion Sulzburger will speak on some famous dermatologists. President of the Club is Dr. Lawrence C. Parish, of Philadelphia; Secretary/Treasurer, Dr. Gerald N. Wachs, Kenilworth, N.J.

Rochester, Minnesota

The Mayo Foundation History of Medicine Society held a dinner meeting on July 11, 1973. Speakers of the evening were Dr. Hugh B. Lynn, who talked on "Another Look at Dr. Samuel Mudd," and Dr. Waltman Walters, whose subject was "E. Starr Judd, M.D., Eminent Mayo Surgeon."

Work in Progress

William R. Woodward is writing a doctoral dissertation on the topic, "The Medical Realism of Hermann Lotze," and would welcome information on the whereabouts of any unpublished material by Lotze. Mr. Woodward, whose advisor is Dr. George Rosen, is in the Department of the History of Science and Medicine, Yale University, 56 Hillhouse Ave., New Haven, Conn. 96520.

NEWS FROM ABROAD

Germany

In honor of Professor Karl E. Rothschuh, an international colloquium took place in Münster, July 5-6, 1973. The occasion was the 65th birthday and retirement of

Professor Rothschuh, Director of the Institut für Geschichte der Medizin der Universität Münster. Chief organizer of the colloquium, which had as its theme "Medizin als Wissenschaft," was Richard Toellner of West Berlin. Günter B. Risse of the University of Wisconsin represented the United States. In addition to Professors Toellner and Risse, speakers included Erwin H. Ackerknecht, Luigi Belloni, Kurt Hübner, Erna Lesky, Gerrit A. Lindeboom, Eduard Seidler, and Rainer Specht.

Paris

In connection with the Congrès International d'Histoire de la Pharmacie in September, a special exhibit will be presented at the Musée d'Histoire de la Médecine. 12, rue de l'Ecole de Médecine, 75 Paris 5^e. The exhibit, entitled "Pharmacie par l'Image, 1800-1900," will be on view September 25-October 15, 1973. A printed catalog will be available.

South Africa

Dr. Cyril Adler, Honorary Director of the Museum of the History of Medicine, University of the Witwatersrand, Johannesburg, reports on the activities of the Museum in 1972. The year saw the completion of an authentically reconstructed early 20th-century Johannesburg pharmacy. Many valuable additions were made to the Museum's collections, including postage stamps and medals of medical and pharmaceutical interest. Several special exhibits were mounted during the year, among them "The History of Paediatrics," and "The History of Anaesthetics," and the Museum arranged six lectures on medical history: "African Medicine, Primeval to 20th Century," J. M. Watt; "The History of Transplantation in South Africa," C. J. Mieny; "The Hermaphrodite through History," Joseph H. Kiefer; "Medical and Social Aspects of the Great Plague in London, 1665," W. A. Sloan; "The History of Anaesthetics" and "Quacks and Quackery in Medicine and Pharmacy," Cyril Adler.

Vienna

Professor Erna Lesky has been elected to honorary membership of the phil.-hist. class of the Austrian Academy of Sciences, and to corresponding membership of the Instituto de Historia de la Ciencias, Academia Nacional de Buenos Aires.

BOOK REVIEWS

PAUL ROAZEN. *Brother Animal: The Story of Freud and Tausk*. New York: Alfred A. Knopf, 1969. xx + 221 + v pp. \$5.95.

This recounting of the tragedy that was Victor Tausk is Paul Roazen's vehicle for a visit to the personal world of Freud and his circle during the first two decades of the twentieth century. Roazen spent three years gathering the oral tradition from about one hundred players in the early phases of the growth of psychoanalysis. He has combined this *tour de force* with an analysis of relevant journals and papers, such as those of Lou Andreas-Salomé, and provides a startlingly revealing glimpse into the brilliant and somewhat paranoid vanguard that psychoanalysis as an intellectual movement was in its early days.

Victor Tausk was born in 1879 in Slovakia. He died by his own violent hand in 1919, a victim of impulsiveness and unresolved dependency as well as Freud's competition-spurred rejection of him. Tausk held a doctorate in jurisprudence and had worked as a journalist. Both these careers were generally unsuccessful, as was his marriage. He experienced a severe depressive episode in 1907, following which he decided to go to medical school and then into psychoanalysis.

Tausk was diligent and bright. He attracted Freud's attention and was accepted into the exclusive inner circle of psychoanalysis which included such people as Reik, Rank, Sachs, Federn, Andreas-Salomé, Jung, Bleuler, and Adler. Tausk made several significant original contributions to psychoanalytic thinking even before he finished his medical studies in 1914. As was common in Freud's students, Tausk was brilliant, innovative, challenging, brave, unconventional, and difficult to control. He stagnated somewhat as a military physician during World War I then returned to Vienna to resume his psychoanalytic practice.

At this juncture, "Tausk's great dream now was to be analyzed by Freud." Freud was the master, and Tausk recognized he needed help for his unresolved personal problems. Freud flatly refused out of fear. He feared Tausk would cause even more problems in the Psychoanalytic Society by attacking or disagreeing with its founder. He apparently feared competition. This book presents no hint that Freud demurred because he thought the counter-transference would interfere, or that he thought treatment not indicated. In fact, he recommended that Tausk go into analysis with a newcomer to the circle, Helene Deutsch, who was at that time in analysis with Freud. This appeared to be even worse judgment than Freud's blunt refusal to take Tausk himself. Indeed, it turned out poorly when Tausk accepted this offer as a way to continue to contact and compete with Freud through Deutsch. He spoke in therapy almost exclusively of Freud. The relatively inexperienced Deutsch was overwhelmed. Much of her time with Freud was taken up with Tausk. After three months, Freud leveled the ultimatum at Deutsch that she either terminate with Tausk or he would terminate with her. He had had enough of

Tausk. Deutsch dismissed Tausk in March 1919. On July 3, 1919, without notice and ostensibly over a new romantic attachment, Tausk both hanged and shot himself. Thus the vagaries of personality structuring led Tausk (or Freud) to "solve" the rivalry with the master differently than did Adler, Rank, or Jung. They simply became deviationists on whom Freud heaped criticism. Roazen's careful exposition of these personality characteristics of both Freud and Tausk, plus the intercurrent circumstances that led to such a resolution, is fascinating and plausible.

On the other hand, Roazen's attempt at diagnostic terminology in reference to Tausk is clumsy and incomplete. Another disconcerting facet of this book lies in its redundancy, almost as if the chapters were written as separate essays, then put together.

Despite these minor blemishes, a picture of Freud emerges which must be set alongside others if one wants a full panorama of this brilliant, all too human, founder of psychoanalysis. Lou Andreas-Salomé pointed up the incongruity when she spoke admiringly of Freud. "Confronted by a human being who impresses us as great, should we not be moved rather than chilled by the knowledge that he might have attained his greatness only through his frailties?"

Reviewed by RICHARD L. GRANT, M.D., Associate Professor of Psychiatry, University of Vermont, College of Medicine, Burlington, Vt.

The Medical Aphorisms of Moses Maimonides. Vols. 1 and 2. Translated and edited by Fred Rosner and Suessman Muntner. New York: Yeshiva University Press, 1970-1971 [Studies in Judaica Nos. 3 and 4]. Vol. 1, 267 pp., \$4.95; vol. 2, 244 pp., \$5.50.

Moses Maimonides, who was born in Cordova, Spain, in the year 1135 but spent the greater portion of his life in Fostat, a suburb of Cairo, Egypt, where he died toward the end of 1204 C.E., was the foremost Talmudist and religious philosopher produced by medieval Jewry. He was also an outstanding physician, highly esteemed in his day, not only for his medical erudition but also for his originality in this field and his thoroughness in his practice of the art of healing. A translation of his medical writings, of which *The Medical Aphorisms* is the most extensive, from the Arabic original into a western European language, which would render them accessible to persons unfamiliar with Arabic but interested in the history of medicine, should therefore be most welcome. This is the task that Drs. Rosner and Muntner have set themselves to carry out. Volume 1 covers about one half of the text published *in toto* in a Hebrew translation by Dr. Muntner in Jerusalem in 1959 under the title of *Pirke Moshe Birefuah*.

While most of the approximately 1500 aphorisms contained in this work, which deals in summary fashion with many aspects of anatomy, physiology, surgery, balneology, gynecology, hygiene, and related subjects, are based on the writings of Galen and Hippocrates, there is a good deal in it that represents the author's own thinking based on personal observation and experimentation. Thus, for example, he

disagrees with both Hippocrates and Galen in their recommendation of the use of barley gruel as a purgative for the gastrointestinal tract. He would prefer julep or althea (treatise XIII, 6). He also reports the good results obtained by him by the administration of agaricon (treatise XIII, 50).

Since both of the translators are competent physicians, familiar with the medical subjects treated as well as the technical terms in Hebrew as well as English, the translation is on the whole fairly accurate. However, they themselves admit that even in the Hebrew edition, that appeared in Jerusalem, there were typographical errors and obscurities due in part to the clumsy Hebrew rendering of the original Arabic by the thirteenth century translators, Nathan Hameathi and Zerachiah ben Yitzchak ben Shealtiel Chen (p. 18). It is, therefore, regrettable that the original Arabic manuscripts were not used as the basis of this translation and also that the editors did not exercise greater care than they did in the use of English idiom.

A year after the publication of the first volume of the translation into English by Fred Rosner and Suessman Muntner of the Medical Aphorisms of Moses Maimonides the second volume made its appearance. It covers treatises fifteen to twenty-five of Muntner's Hebrew version of the original Arabic text. Most original among these is the last, in which the author expresses his disagreements with Galen notwithstanding the virtually undisputed authority exercised by this celebrated Greek physician of the second Christian century for an entire millennium. Some of this independence on the part of Moses Maimonides is also evidenced in the chapters preceding it, which deal with such subjects as general surgery, gynecology, physical exercise, diet, pharmacology and rare diseases. Appended to this volume is an extensive index to its contents as well as those of volume 1.

As far as the translation itself is concerned, it possesses the same virtues and is marked by the same deficiencies as that of volume I, although these shortcomings do not detract appreciably from the all around value of this rendering into English of one of the most important medical sources of the Middle Ages.

Review by SAMUEL ROSENBLATT, Ph.D., Associate Professor of Oriental Languages, The Johns Hopkins University, Baltimore, Maryland.

Handbuch der Kinderheilkunde. Herausgegeben von H. Opitz und F. Schmid. Band I, Teil 1: A. "Geschichte der Kinderheilkunde" by A. Peiper. B. "Physiologie und Pathologie der Entwicklung," by various contributors. xxi + 903 pp. Ill. DM 345/\$95.90, for a single volume; DM 276/\$75.90 for subscribers to the 9 volume series.

A German "Handbuch" is not necessarily a manual to be conveniently carried in the hand. Gerhard's *Handbuch der Kinderkrankheiten* published just about a century ago went into a great number of volumes, and this one, apparently fashioned in somewhat similar style, will require 9 ponderous tomes to satisfy the

ambition of the publishers to present this modern encyclopedic coverage of modern pediatrics. Just as the old Gerhard's *Handbuch* began with a history of pediatrics, by Carl Hennig, this one also begins with a 30-page overview of pediatric history by the late Dr. Albrecht Peiper. This calls to mind the History of Pediatrics by that unexcelled medical humanist and historian, Fielding H. Garrison, which in like fashion formed the initial chapter of the 1923 8-volume encyclopedia, *Abt's Pediatrics*.

Albrecht Peiper, who almost reached the venerable age of 80 when he died about a year or so ago, was an eminent emeritus professor of pediatrics at the University of Leipzig. His *Chronik der Kinderheilkunde* first appeared in 1951 and grew to nearly double that size in the 4th edition of 1965, enriched by 132 informative illustrations. Here we find a very brief version of it, a summary of 30 pages with 15 of the illustrations. This sketch follows the parent work in its topical approach, unencumbered by any long eulogistic biographies. A few paragraphs dispose successively of Egyptian, Assyrian, Greek, Indian, Islamic and Germanic pediatrics to be followed by equally brief histories of infant exposure, foundling homes, hospitals, feeding, contagious diseases individually considered, and pediatric folklore. This summarization should stimulate the reader to go to the original source where at one-fourth the cost he can delve into much greater detail about each particular topic.

In the "B" section of the volume covering the physiology and pathology of development, under the subject of endocrinology, H. Rodek gives a brief history of the pituitary beginning with Thomas Willis; and of the pineal beginning with Herophilus. In like manner and in true Oslerian style other contributors occasionally present introductory historical notations concerning their particular subjects which serve to orient the reader in time and evolution. Few of these notations will attract the medical historian, yet in some cases it will be difficult to find such information elsewhere, as, for example, the history of the parathyroid by W. Swoboda preceding his exhaustive review of the knowledge concerning this gland; or A. Schwenk on precocious puberty, H. Tesseraux on the thymus, etc.

The volume as a whole, consisting as it does of a series of reviews of timely pediatric topics, should be in libraries accessible to those who have use for it, but the price, for one thing, will preclude it from the libraries of most individuals.

Reviewed by SAMUEL X. RADBILL, M.D., practicing pediatrician and Lecturer in the History of Pediatrics, Graduate School of Medicine, University of Pennsylvania, Philadelphia, Pa.

THOMAS B. HALL. *Medicine on the Santa Fe Trail*. Dayton, Ohio: Morningside Bookshop, 1971. 160 pp. Ill. \$12.50 [Distributed by Morningside Bookshop, P.O. Box 336, Forest Park Station, Dayton, Ohio 45405].

This small book, somewhat loosely put together, presents a picture of diseases prevalent in the country traversed by the Santa Fe Trail, and in Santa Fe itself, in

military units in the 1840's. The inspiration for the volume came in large measure from a diary, "Notes by the Wayside," of Thomas Bryan Lester (1824-1888), a young physician of Salem, Marion County, Illinois, who enlisted as a private in an Illinois regiment marching from Fort Leavenworth, Kansas, to Santa Fe, New Mexico, between July 4 and September 10, 1847, to join other American Forces in the war between the United States and Mexico. Although Lester travelled as an Army private, his duties were largely medical, and apparently he served unofficially as a physician from the time of his enrollment. He served officially as a physician only after reaching Santa Fe, when he was appointed acting assistant surgeon on a contract basis by the regimental colonel. Dr. Lester's diary records many details of the mode of travel, difficulties en route, and diseases encountered on the trail.

The latter included malaria, typhoid fever, dysentery, smallpox, measles, what was diagnosed as Asiatic cholera, scurvy and venereal disease, and in addition the traumas of rough travel and other physical hazards, bad food, bad water, and insect infestation. The regiment remained in Santa Fe for several months, and some of the most interesting sections of the book deal with the social life of that primitive frontier city. The health records of the regiment itself, set forth in the book in official military detail, are illuminating as an index of the times and the hazards of non-combat military life. Diarrhea and stomatitis accounted for the largest numbers of illnesses treated. Many of the deaths recorded were listed as due to "Typhoiditis."

Of the disabilities on the trail, the author devotes most attention to malaria. The cause was not known in those days, but the therapeutic value of quinine, which was always in short supply, was recognized. Venereal disease, most of it acquired in Santa Fe, was common. On the whole the record of the Army hospital in Santa Fe, considering the level of medical practice at the time, was fairly good.

A bibliography at the end of the book, and a roster of the First Regiment of Illinois Volunteers, with which Dr. Lester served, make the book useful as a reference work for the state of knowledge at the time and a specific record of that particular regiment.

Reviewed by ESMOND R. LONG, M.D., Professor of Pathology Emeritus, University of Pennsylvania, Philadelphia, Pa.

LESTER S. KING (Editor). *A History of Medicine*. Selected Readings. Penguin Books, 1971. 316 pp. \$5.75 (Paperback).

Even a very large book of selected readings in the history of medicine would have a certain arbitrary quality, which it cannot be denied this small book has. All depends, however, on the editor whose judgment confronts this difficulty, and here the reader of this neat little Penguin is in good hands; the choices made for him, all the way from Hippocrates to the decade before the present one, are justifiable, coherent and clear. Room has been found for Paracelsus as well as Harvey, for Hahnemann as well as Claude Bernard, for Banting and Best and for Walter Reed,

twenty-four selections in all, divided into four categories, "The Classical Heritage," "Revolt," "Development" and "Fruition." The twenty-two doctors appearing have been chosen as "representative" rather than as "the greatest." The translations are either old standard ones or expert new ones, all of them very readable. The introduction (not thirty small pages) is interesting and intelligent. It conveys wonderfully well some of the ways in which historians think about history. All the greater pity, then, that this admirable paperback, made and printed in Great Britain and reasonably priced when sold there (which is the great tradition of the Penguin) should appear in the homeland of its distinguished editor at an excessive price. The unfortunate consequence is that the distribution of this highly recommended book will be very limited where it ought to be very wide.

Reviewed by LLOYD G. STEVENSON, M.D., Ph.D., Professor of the History of Medicine, The Johns Hopkins University, Baltimore, Md.

CYRIL ELGOOD. *Safavid Medical Practice; or The Practice of Medicine, Surgery and Gynaecology in Persia between 1500 A.D. and 1750 A.D.* London: Luzac, 1970. xvi + 301 pp. Ill. £5.50.

Of the three roughly equal sections into which the book is divided the first is an "enlargement" of chapters 13 and 14 of the author's *A Medical History of Persia*, the second is a slightly revised version of his *Safavid Surgery*, and the third is a largely new account of Safavid gynecology and obstetrics. It is clear that Dr. Elgood (sometime physician to the British embassy in Teheran) has undertaken, as he said on another occasion, a "vast amount of research in dusty, forgotten manuscripts." He might, however, have spared his successors a good deal more of such labor than he has. In the book as published, his assertions are rarely, if ever, adequately documented; some seem to want argumentation as well. That is not to deny his claim to have broken "virtually new ground." The numerous details he unearthed are, moreover, recounted in a fairly coherent and interesting fashion.

Reviewed by DONALD W. PETERSON, M.D., Fellow in the History of Medicine, The Johns Hopkins University, Baltimore, Md.

THE BULLETIN RECENTLY RECEIVED*

Albucasis. *On Surgery and Instruments*. A Definitive Edition of the Arabic Text with English Translation and Commentary by M. S. Spink and G. L. Lewis. Berkeley and Los Angeles: University of California Press, 1973. xv + 850 pp. Ill. \$36.00.

Bibliographie annuelle de l'histoire de France du cinquième siècle à 1945. Année 1972. Paris: Editions du Centre National de la Recherche Scientifique, 1973. lxxv + 729 pp. Fr. 149.80.

Joseph Black. *On Acid Humor Arising from Foods and on White Magnesia*. A translation of the Latin thesis *De Humore Acido a Cibis Orto, et Magnesiae Alba*, 1754. Translated by Thomas Hanson, with an introduction by Stacey B. Day. Minneapolis: Bell Museum of Pathology, University of Minnesota, 1973. 40 pp. \$6.00 (hardbound), \$2.25 (paperbound).

J. Sanbourne Bockoven. *Moral Treatment in Community Mental Health*. New York: Springer Publishing Co., 1972. xi + 305 pp. \$7.95.

D. Erskine Carmichael. *The Pap Smear: Life of George N. Papanicolaou*. With a foreword by Charles S. Cameron. Springfield, Ill.: Charles C Thomas, 1973. xvii + 122 pp. Ill. \$8.00.

Philip Cash. *Medical Men at the Siege of Boston, April, 1775-April, 1776*. Problems of the Massachusetts and Continental Armies. Philadelphia: American Philosophical Society, 1973. x + 183 pp. Ill. \$3.00.

M. B. Etziony. *The Physician's Creed*. An Anthology of Medical Prayers, Oaths and Codes of Ethics Written and Recited by Medical Practitioners through the Ages. Springfield, Ill.: Charles C Thomas, 1973. 162 pp. Ill. \$7.50.

J. Genner. *The Medical Society of Copenhagen, 1772-1972*. Odense University Press, 1972 (*Acta Historica Scientiarum et Medicinalium*, ed. *Bibliotheca Universitatis Hauniensis*, 27). 344 pp. Ill.

Gerald N. Grob. *Mental Institutions in America: Social Policy to 1875*. New York: The Free Press; London: Collier Macmillan, 1973. xiii + 458 pp. Ill.

Nobel Lectures, Including Presentation Speeches and Laureates' Biographies. *Physiology or Medicine, 1963-1970*. Vol. 4. Amsterdam-London-New York: Elsevier Publishing Co., 1972. xi + 503 pp. Ill. \$38.00.

Denis Lawson-Wood and Joyce Lawson-Wood. *Acupuncture Handbook*. 2d. ed. New York: British Book Center, 1973. xviii + 141 pp. Ill. \$7.95.

Erna Lesky and Adam Wandruszka (Editors). *Gerard van Swieten und seine Zeit*. Internationales Symposium veranstaltet von der Universität Wien im Institut

*The *Bulletin* reserves freedom of decision as to the publications to be listed in this section. Items received, other than those assigned for review, are ultimately incorporated into the collection of the Institute of the History of Medicine.

- fur Geschichte der Medizin, 8-10 Mai 1972. Wien-Köln-Graz: Verlage Hermann Böhlau Nachf., 1973 (Studien zur Geschichte der Universität Wien, Bd. 8). 194 pp. Ill. DM 54.
- Gregorio Mayáns y Siscar. *Epistolario I: Mayáns y los médicos*. Transcripción, notes y estudio preliminar de V. Peset. Valencia, 1972 (Publicaciones de Ayuntamiento de Oliva, 3). lxiii + 538 pp. Ill.
- Daphne A. Roe. *A Plague of Corn: the Social History of Pellagra*. Ithaca and London: Cornell University Press, 1973. xiii + 217 pp. Ill. \$11.50.
- Semmelweis Medical Historical Museum, Library and Archives. *Pictures from the Past of the Healing Arts*. Budapest, 1972 (Communicationes de Historia Artis Medicinae, Suppl. 5). 129 pp. 125 ill.
- Owsei Temkin. *Galenism: Rise and Decline of a Medical Philosophy*. Ithaca and London: Cornell University Press, 1973. xvii + 240 pp. Ill. \$15.00.
- Arnold Thackray. *John Dalton: Critical Assessments of His Life and Science*. Cambridge, Mass.: Harvard University Press, 1972. xiv + 190 pp. Ill. \$11.50.
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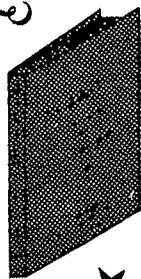
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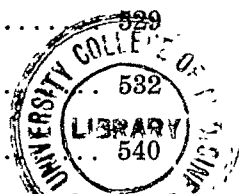
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THE GROWTH OF HARVEY'S *DE MOTU CORDIS**

JEROME J. BYLEBYL

Recent scholarship has shown that William Harvey's work on the heart and blood vessels grew in two stages, an early study of the movements of the heart and arteries, and the later discovery and proof of the circulation.¹ Harvey also treated these two subjects separately in his book *On the Movement of the Heart and Blood in Animals* (1628), the first half of which deals with the movement of the heart, while the second half takes up the circulation.

In this article I hope to show that this clear separation of themes in *De motu cordis* was not just a strategic ploy on Harvey's part, but that

* An earlier version of section I entitled "The arterial pulse and the discovery of the circulation" was read at the forty-second annual meeting of the American Association for the History of Medicine (Baltimore, 1969). Research for this paper has been supported in part by a post-doctoral fellowship from the National Science Foundation and a research fellowship from the Wellcome Trust. I wish to thank Drs. Frederic L. Holmes, Walter Pagel, and Charles Webster for valuable comments and suggestions.

¹ Gweneth Whitteridge, introduction to her edition of *The Anatomical Lectures of William Harvey* (Edinburgh and London: Livingstone, 1964), pp. xxxvii-li, and *William Harvey and the Circulation of the Blood* (London and New York: Macdonald, Elsevier 1971), pp. 89-103; Geoffrey Keynes, *The Life of William Harvey* (Oxford: Clarendon, 1966), pp. 105-109; Walter Pagel, *William Harvey's Biological Ideas* (New York: Hafner, 1967), pp. 211-218.

he probably wrote the first half before the discovery of the circulation, as an independent treatise on the movement of the heart. Then after the discovery he added the account of the circulation to this earlier treatise, thus completing the work that was published in 1628. In short, I shall suggest that *De motu cordis* underwent a process of growth over time, paralleling the growth of the work that it reports.²

The discussion that follows is rather long and involved, but I believe that *De motu cordis* is of such historical importance as to justify this effort to establish how it evolved. Furthermore, my conclusion, if valid, will also shed new light on both the discovery of the circulation itself and its chronology, though I shall not deal directly with these matters in the present article.

As a preliminary to the consideration of *De motu cordis*, I shall first briefly outline the development of Harvey's work on the heart and blood vessels in relation to the views of his predecessors. Then in the second section I shall try to show that at some time, whether before or after the discovery of the circulation, Harvey prepared a separate treatise whose subject was only the movement of the heart and arteries; only after the substantial completion of this work did he change his plans and expand the original treatise into the larger *De motu cordis et sanguinis*. Finally, I shall take up a separate and more difficult point, namely that he probably wrote this earlier, more limited treatise at a time when he was actually ignorant of the circulation.

I. The Movement of the Heart and the Discovery of the Circulation

Our principal source of information about the beginnings of Harvey's work on the heart and blood vessels is the manuscript of his anatomical lecture notes, written largely in 1616.³ For a long time it was

² While it has been clearly recognized by Whitteridge *et al* (n. 1) that the work reported in the first half of *De motu cordis* was substantially completed before the discovery of the circulation, to my knowledge no one has previously suggested that these portions were actually written at this time. Dr. Walter Pagel has kindly pointed out to me that Chauncey D. Leake and, following him, Frederick G. Kilgour have briefly discussed the idea that different parts of *De motu cordis* were written at various times, but they do not assume that some parts were written before the discovery of the circulation, and on the whole their proposed chronology is quite different from the one suggested here. See Leake, introduction to his translation of Harvey, *De motu cordis* (Springfield, Ill., and Baltimore: C. C Thomas, 1931), pp. x-xi, and Kilgour, "William Harvey and his contribution," *Circulation*, 1961, 23:286-296, esp. 292-293.

³ The manuscript of Harvey's lecture notes has been published in facsimile with a transcription as *Prelectiones anatomiae universalis* (London, 1886); C. D. O'Malley, F. N. L. Poynter, and K. F. Russel have published an annotated translation, *William Harvey Lectures on the Whole of Anatomy* (Berkeley and Los Angeles: University of California Press, 1961),

commonly thought that he had already discovered the circulation when he first prepared these notes, but recently Gweneth Whitteridge has confirmed that the brief account of the circulation which they contain was probably added at some later time.⁴ From the original notes it seems clear that Harvey did not yet know of the circulation by 1616, but had made significant progress in elucidating the movements of the heart and arteries, the more limited problem that first claimed his attention. Indeed, he had effectively brought to completion a new physiology of the heart and arteries that since the mid-sixteenth century had gradually begun to supplant the long dominant Galenic views.

In Galenic physiology, the heart and arteries were regarded as a more or less self-contained system, distinct in function from the liver and veins.⁵ The latter organs were primarily a blood system, concerned with providing nourishment to all the parts of the body.⁶ According to Galen, ingested food receives a preliminary concoction in the stomach and intestines, and is then taken up by the mesenteric veins and transported to the liver, in whose fine vessels the conversion of nutriment into red blood is completed. From the liver the blood passes by way of the hepatic veins into the vena cava and its branches, from which it is gradually absorbed and assimilated by all the parts of the body. Galen considered the right cardiac ventricle and pulmonary artery to be a specialized extension of this nutritive blood system: the right ventricle takes up some of the blood from the vena cava, gives it a further concoction, and transmits it to the pulmonary artery for the nutrition of the lungs.⁷

Galen regarded the heart and arteries not primarily as a blood

Gweneth Whitteridge has prepared a new transcription, with introduction notes, and translation *The Anatomical Lectures of William Harvey* (Edinburgh and London: Livingstone, 1964), to which most references will be made here (henceforth cited as *Prelectiones*).

⁴ Whitteridge, intro. to *Prelectiones*, pp. xxxvii-viii, l-li. Earlier suggestions to this effect are cited by Pagel, *Harvey's Biological Ideas*, pp. 213-4, n. 16.

⁵ For a thorough discussion of Galen's cardiovascular physiology, see now C. R. S. Harris, *The Heart and the Vascular System in Ancient Greek Medicine from Alcmaeon to Galen* (Oxford: Clarendon, 1973), pp. 267-396. See also L. G. Wilson, "Erasistratus, Galen and the *Pneuma*," *Bull. Hist. Med.*, 1959, 33: 293-314; and A. R. Hall, "Studies in the history of the cardiovascular system: I. Galen," *Bull. Hist. Med.*, 1960, 34: 391-413.

⁶ Galen's fullest discussion of nutrition and the role of the veins is in *On the natural faculties*, ed. and tr. A. J. Brock (Loeb Library, Harvard University Press, 1952), hereafter cited as *Nat. facs.*

⁷ Galen, *On the usefulness of the parts of the human body*, bk. 6, chs. 9-11, tr. M. T. May, 2 vols. (Ithaca, N.Y.: Cornell Univ. Press, 1968), I, 295-306 (hereafter cited as *De usu part.*)

system, but as a heat system, responsible for the generation and distribution of the innate heat and its ventilation through pulsatile movement.⁸ In his view the most essential part of the heart is the left ventricle, the chief focus of the innate heat, which it supplies to the rest of the body through the arteries.⁹ But while the housing and distribution of heat are the most important functions of the heart and arteries, their most conspicuous activity is pulsatile motion. Galen held that the power of active dilatation and contraction is innate to the heart, but is communicated to the aorta and other arteries through their tunics, with the result that they also actively dilate and contract with the same rhythm as the heart.¹⁰ This notion of active arterial pulsation was of fundamental importance in Galen's system of physiology and medicine. He devised a variety of arguments and experiments in an effort to establish its validity;¹¹ he devoted an entire treatise to expounding its functional significance;¹² and he wrote four long treatises, divided into some sixteen books, on the study of the pulse for the diagnosis and prognosis of disease.¹³

In Galen's view, pulsation was closely related to pulmonary respiration, both being chiefly concerned with the preservation of the innate heat through a process of cooling and ventilation. Thus the principal function of the lungs is to ventilate the heart by drawing in cool air during inhalation and expelling heated air and smoky fumes during exhalation.¹⁴ The left ventricle, in turn, ventilates itself directly by drawing in cool air through the pulmonary veins in dilatation and returning heated air and smoky fumes to the lungs in contraction.¹⁵ And similarly, by actively dilating and contracting, the arteries inhale and exhale through pores in the skin to ventilate the other parts of the

⁸ Galen, *De usu part.*, bk. 1, ch. 16, p. 89; *De semine*, bk. 1, ch. 9, in *Opera omnia*, ed. C. G. Kühn, 20 vols. (Leipzig, 1821-1833), IV, 546, *Methodus medendi*, bk. 9, ch. 10, ed. Kühn X, 635; *Synopsis librorum depulsibus*, ch. 34, ed. Kühn IX, 548-549.

⁹ Galen, *De usu pulsuum*, chs. 2 and 3, ed. Kühn V, 157-160 (henceforth cited as *De usu puls.*)

¹⁰ *Ibid.*, chs. 1 and 4, pp. 151, 163-164.

¹¹ Galen, *An in arteriis natura sanguis contineatur*, chs. 6-8, ed. Kuhn IV, 725-726, 729-735 (hereafter cited as *An sanguis*); *De usu puls.*, ch. 5, pp. 167-169.

¹² *De usu puls.*

¹³ Galen, *De differentia pulsuum*, *De dignoscendis pulsibus*, *De causis pulsuum*, *De praesagitione ex pulsibus*. ed. Kuhn VIII-IX; analyzed by Harris, *Heart and Vascular System*, pp. 397-431.

¹⁴ Galen, *De utilitate respirationis*, ed. Kuhn IV, 470-511.

¹⁵ *Ibid.*, ch. 5, pp. 510-511; *De usu part.*, bk. 6, ch. 2, bk. 7, chs. 8-9, pp. 280-281, 345-351.

body.¹⁶ Thus the lungs, pulmonary veins, left cardiac ventricle, and arteries constituted for Galen a heating and ventilating system, just as the digestive organs, portal veins, liver, and systemic veins constituted a nutritive system.

These ideas were developed by Galen in some detail and with considerable consistency, and clearly formed the central core of his cardio-arterial physiology. But he also ascribed some secondary functions to the heart and arteries relating to arterial blood and vital spirits, though here he expressed himself more briefly and with a notable lack of consistency. As a result, the extraction of a coherent theory of the arterial blood and vital spirits has long been a major problem, first for Galen's followers, and more recently for medical historians.¹⁷

I shall not enter here into the full details of Galen's views on these matters, but shall simply indicate some of the more important themes and problems. As is well known, Galen held that some of the blood from the right ventricle of the heart passes through minute pores in the cardiac septum to the left ventricle.¹⁸ From the left ventricle the blood is transmitted to the arteries, though in Galen's view it is not so much a matter of the heart expelling blood into the arteries as of the arteries sucking blood out of the heart through their active dilatation.¹⁹ Furthermore, throughout the body the arteries have minute connections or anastomoses with the veins, through which they also draw blood into themselves when they dilate.²⁰ Thus Galen did not envision a simple, centrifugal movement of arterial blood from the heart, nor did he think of the heartbeat as being primarily concerned with the transmission of blood to the arteries. Instead, the active pulsation of the entire cardio-arterial system, in addition to serving a ventilating function, results in a general irrigation of the heart and arteries with blood, derived from the veins both through the pores in the cardiac septum and through the arterio-venous anastomoses throughout the body.

Galen was not consistent regarding the amount of blood in the left ventricle and arteries, at times asserting that they contain little blood and much spirit, and at other times insisting that they are filled with

¹⁶ *De usu puls.*, chs. 5-8, pp. 164-166, 169-179.

¹⁷ The best analysis of these problems is O. Temkin, "On Galen's pneumatology," *Gesnerus*, 1951, 8: 180-189.

¹⁸ Galen, *Nat. facs.*, bk. 3, ch. 15, pp. 321-323; *De usu part.*, bk. 6, ch. 17, pp. 323-325.

¹⁹ Galen, *Nat. facs.*, bk. 3, ch. 14, p. 317.

²⁰ *Ibid.*, bk. 3, chs. 13-15, pp. 313-319; *De usu puls.*, ch. 5, pp. 164-167.

blood.²¹ Nor did he clearly spell out the functions of the arterial blood, beyond briefly stating that it serves an auxiliary role to the venous blood in the nutrition of the body,²² and that it gives rise to vapors which combine with air to form spirits, sometimes referred to as "vital spirits."²³ He apparently thought that vital spirits are generated throughout the arteries as well as in the heart, but he did not say much about their functions, except that they serve as nutriment for the more refined animal spirits of the brain and nerves.²⁴

Thus Galen left his successors with a number of ambiguities and inconsistencies concerning the arterial blood and vital spirits to resolve. In trying to do so they generally tended to minimize the importance of the arterial blood *per se*, to enhance the role of the vital spirits, and to centralize the generation of both substances in the left ventricle of the heart.²⁵ Of Galen's various statements about the amount of the arterial blood, the ones that made the greatest impression on his late ancient, medieval, and Renaissance disciples were that the left ventricle and arteries contain little blood and much spirit.²⁶ Furthermore, the arterial blood was looked upon primarily as one of the ingredients from which vital spirits are generated by the heart, while the vital spirits themselves were considered to be of crucial importance for vivifying the entire body and as a vehicle of the innate heat.²⁷ The unique ability to

²¹ Galen, *De usu part.*, bk. 6, chs. 10 and 16, pp. 297-299, 321; *An sanguis*, chs. 2 and 6, pp. 707-708, 723-724; *De placitis Hippocratis et Platonis*, bk. 1, ch. 5, ed. Kühn V, 181-185 (hereafter cited as *De placitis*).

²² Galen, *De usu part.*, bk. 4, chs. 15 and 16, bk. 6, chs. 10 and 17, pp. 232-235, 299, 322-323; *Nat. facts.*, bk. 3, ch. 15, p. 323.

²³ On vital spirit, see esp. Temkin, "Galen's pneumatology," *passim*, and Galen, *Methodus medendi*, bk. 11, ch. 3, bk. 12, ch. 5, pp. 742, 839; *De placitis*, bk. 7, ch. 3, p. 608; *De usu part.*, bk. 6, ch. 17, p. 324.

²⁴ Galen, *Methodus medendi*, bk. 12, ch. 5, p. 839; *De placitis*, bk. 7, ch. 3, p. 608; *Commentary 3 on Hippocrates De alimento*, I, ed. Kuhn XV, 263; *De usu part.*, bk. 7, ch. 8, bk. 9, ch. 4, pp. 347, 432-433.

²⁵ This summary is based largely on my unpublished doctoral dissertation, "Cardiovascular physiology in the sixteenth and early seventeenth centuries," (Yale University, 1969), pp. 85-137.

²⁶ E.g., Theophilus Protospatarius, *De corporis humani fabrica*, tr. J. P. Crasso (Paris, 1556), bk. 3, p. 45; Peter of Abano, *Conciliator controversiarum* (Venice, 1565), Diff. 31, prop. 3, fol. 49r; Jean Fernel, *De naturali parte medicinae* (Venice, 1547), bk. 4, ch. 2, fol. 109v. In fact, I know of no one between Galen and the later sixteenth century who clearly maintained that the left ventricle and arteries are largely filled with blood.

²⁷ Mundinus, *De omnibus humani corporis interioribus membri anathomia*, ed. Joh. Adelphus (Strassburg, 1513), fol. xxiv; Nicolò Massa, *Liber introductorius anatomiae* (Venice, 1536), fols. 54r-56r, 60r; Fernel, *De naturali parte*, bk. 6, ch. 16, fols. 220v-221r. However, Averroes and some of his followers ascribed to the arterial blood an important role in controlling the nutritive process. See Averroes, *Colliget* (Lyons, 1531), bk. 1, ch. 8, fols. 20v-21r; and Peter of Abano, *Conciliator*, Diff. 31, fols. 48v-50v.

generate vital spirits from air and blood was now regarded as one of the chief attributes of the heart, of equal importance with its role as the source of heat and of pulsatile movement.²⁸ Thus in the later Galenic system two main processes were considered to take place within the heart and arteries: on the one hand, the heart and arteries supply heat to all the parts of the body and ventilate that heat through their pulsation; on the other hand, the vital spirits are generated in the left ventricle from a mixture of air and sanguineous vapors, and are then distributed to the entire body through the arteries.

During the later sixteenth and early seventeenth centuries, a distinct new cardio-arterial physiology began gradually to supplant these older ideas. Of fundamental importance in the new view was the recognition that the heart and arteries are primarily a sanguineous rather than a pneumatic system, and that the heartbeat serves chiefly for the transmission of blood to the arteries, rather than for the ventilation of the innate heat. A variety of factors was involved in this change, but none was more important than the discovery and gradual acceptance of the pulmonary circulation, as enunciated by Realdo Colombo in 1559.²⁹ According to Colombo, the left cardiac ventricle should be regarded as a complete functional analogue of the right ventricle. Just as the right ventricle takes up blood from the vena cava and expels it into the pulmonary artery, so also the left ventricle simply receives blood from the pulmonary vein and transmits it to the arteries, which serve only to convey blood from the heart to all parts of the body.³⁰ Colombo denied that the left ventricle ventilates itself through the pulmonary vein, which conducts only a one-way flow of aerated blood from the lungs to the heart, while Cesalpino went on to refute the notion that the rest of the body is ventilated through arterial pulsation.³¹ Thus the views of at least a minority of late Renaissance physicians began to approximate the modern concepts of the movement of blood through the heart, lungs, and arteries.

²⁸ See esp. Avicenna, *Canon*, bk. 1, fen 1, doc. 6, sum. 1, chs. 1 and 4, in *Libri in re medica omnes*, 2 vols. (Venice, 1564), I, 75, 78-79.

²⁹ This account is based on my dissertation, "Cardiovascular physiology," pp. 300-402, where the work of Colombo and its reception by about forty men in the later sixteenth and early seventeenth centuries are discussed.

³⁰ Realdo Colombo, *De re anatomica* (Venice, 1559), pp. 175-180, 223-224. See also the view of the heartbeat held by Adrian van den Spiegel (died 1625) in *De humani corporis fabrica* (Frankfurt a.m., 1632), p. 355.

³¹ Colombo, *De re anatomica*, pp. 178-179; Andrea Cesalpino, *Peripateticarum quaestionum libri quinque* (Venice, 1571), fols. 107v-112v, discussed by Pagel in *Harvey's biological ideas*, pp. 201-204.

The acceptance of these ideas did not directly affect the notion of the outward flow of venous blood from the liver. Instead, it was simply taken for granted that there are two sets of vessels concerned with supplying blood to the body, and efforts were directed at finding functional differences between the two kinds of blood.³² Thus for Colombo and his followers the blood still had its origin in the liver, and after entering the vena cava could reach the parts of the body by two different routes: either by passing directly into the peripheral veins, or by being taken up by the heart and transmitted through the lungs to the arteries. The more common view seems to have been that most of the blood remains in the veins, but a few Aristotelians maintained that the greater part of the blood reaches the body by way of the heart and arteries, so that for them the arterial blood replaced the venous blood as the principal nutriment of the body.³³

This is approximately the point at which William Harvey entered the picture, as is reflected in his lecture notes of 1616. At this time, Harvey seems to have taken for granted the old idea of the hepatic origin of the blood, and still assumed that some of the blood reaches the body directly *via* the peripheral veins.³⁴ His primary interest, however, was not in the veins, but in the heart and arteries.³⁵ He accepted the views of Colombo and other recent predecessors that these organs are a sanguineous system, and that the heartbeat is concerned only with the transmission of blood from the vena cava, through the lungs, to the arteries. He also seems to have held, as did other Aristotelians, that most of the blood reaches the body by this pathway.³⁶ But to these ideas he had added something of fundamental originality and importance, namely a concrete understanding of how the heart transmits blood by its movement, and of how the arterial pulse is related to this transmission of blood.³⁷

Even this aspect of Harvey's work had important conceptual and methodological roots in the work of his predecessors. Since at least the third century B.C. the discussion of the broad functions of the heart and arteries had been accompanied by a more limited controversy over

³² Colombo, *De re anatomica*, pp. 164-167; Caspar Hofman (praeses), *Problema hoc, cur natura fecerit duo vasa sanguiflua, venas et arterias?* (Altdorf, 1627).

³³ Cesalpino, *De plantis libri XVI* (Florence, 1583), p. 3; Hofmann, *Commentarii in Galeni de usu partium* . . . (Frankfurt a.m., 1625), p. 95, para. 308.

³⁴ Whitteridge, intro. to *Prelectiones*, pp. xlvii-xlix.

³⁵ Harvey, *Prelectiones*, pp. 244-272.

³⁶ *Ibid.*, p. 297.

³⁷ *Ibid.*, pp. 264-272.

the intrinsic nature of the heartbeat and arterial pulse, and the relationship between the two.³⁸ By Galen's time the dispute centered around three interrelated questions: Do the arteries pulsate actively, or are they passively distended by the impulsion of material from the heart? Do the heart and arteries dilate and contract at the same time, or in alternation? Does the heart strike the chest in dilatation or in contraction?³⁹ As we have seen, Galen was firmly convinced that the arteries pulsate actively, and based much of his arterial physiology on this idea. But while he also tended to think that the heart and arteries dilate and contract simultaneously, and that the heart strikes the chest in dilatation, he nevertheless regarded these as specific questions of fact, to be authoritatively settled through direct observation of the living heart. Accordingly, in his treatise *On anatomical procedures* he described techniques for studying the movements of the heart and arteries *in vivo*, thereby laying a methodological foundation for the work of many of his successors, including Harvey.⁴⁰

The dispute was resumed during the later Middle Ages, when most leading medical authorities favored the view that the heart and arteries dilate and contract in alternation, though they based this conclusion largely on theoretical arguments.⁴¹ In the sixteenth century the theoretical dispute was once again supplemented by attempts to settle the question through vivisection, as Vesalius and others followed and even improved upon the techniques described in the newly recovered *Anatomical procedures*.⁴² Vesalius failed to resolve the question of coordination through such observations,⁴³ but Colombo firmly concluded from them that the arteries dilate when the heart contracts, and

³⁸ Various aspects of the pulse controversy in antiquity are discussed by Harris, *Heart and Vascular System*, pp. 186-195, 227-229, 242-266, 379-393.

³⁹ Galen, *De differentia pulsuum*, bk. 4, ch. 6, ed. Kühn VII, 732-733; *On anatomical procedures*, bk. 7, chs. 12-15, ed. Kühn II, 626-641.

⁴⁰ *Ibid.*

⁴¹ For the later Middle Ages, e.g., Peter of Abano, *Conciliator*, Diff. 80, fols. 120v-121v; Jacopo da Forlì, *Expositio et quaestiones in artem medicinalem Galeni* (Venice, 1547), quaest. 27, fols. 132r-133v; sixteenth century, e.g., Leo Rogano, *In Galeni libellum de pulsibus ad tyrones commentarium* (Naples, 1556), fols. 14v-27r; Francisco Valles, *Controversiarum medicarum & philosophicarum editio secunda* (Compluti, 1564), bk. 3, chs. 2-3, fols. 55r-56r. I am presently preparing a more comprehensive study of the pulse controversy from antiquity to the seventeenth century.

⁴² Vesalius, *De humani corporis fabrica* (Basel, 1543), p. 662.

⁴³ Compare the vagueness of his account in the *Fabrica*, p. 662, with his earlier assertion in the *Venesection letter* that the heart and arteries move in alternation: *Epistola docens venam axillarem . . . secandam* (Basel, 1539), reprinted in *Opuscula selecta Neerlandicorum de arte medica*, VIII (Amsterdam, 1930), p. 70.

vice versa.⁴⁴ Moreover, he also added a significant new element to the discussion by pointing out that the heartbeat consists not of two equally active movements, but of a more passive dilatation, during which the heart receives blood into its ventricles, and a more vigorous contraction, during which it expels blood. However, his account was quite brief and was also marred by terminological confusion, and therefore failed to attract much attention. Volcher Coiter also studied the heartbeat and pulse in live animals, and pointed out the need to integrate the movements of the auricles into the sequence of the ventricles and arteries.⁴⁵ Others during the later sixteenth century began to explore the possibility that the arterial pulse might result simply from the impulsion of material by the heart, instead of representing active motion.⁴⁶ Fallopio compared this view of the pulse to the inflation of a glove, though he himself rejected the idea in favor of the Galenic theory.⁴⁷

But despite the seemingly endless discussion of these controversies about the movements of the heart and arteries, and despite repeated attempts to settle them through vivisectional observations, by the early seventeenth century there was as yet no clear-cut resolution that commanded general acceptance.⁴⁸ Nor is it difficult to understand why this was the case, for quite apart from the confusion introduced by theoretical considerations, the problem of determining the sequence of events in the cardiac cycle was intrinsically a very difficult one, especially in the rapidly beating hearts of vivisected animals that were most likely in a state of shock.

It was apparently the challenge of this controversy, for which there was an ancient tradition of reliance on vivisection, that provided Harvey's entree into the study of the heart and blood vessels in live animals. He was clearly familiar with much of the earlier literature in the dispute, and was determined to resolve once and for all the precise

⁴⁴ Colombo, *De re anatomica*, pp. 257-258; discussed by Pagel, *Harvey's Biological Ideas*, pp. 155-156, 215-218, and by Whitteridge, *Harvey and the Circulation*, pp. 71-72.

⁴⁵ Volcher Coiter, *Externarum et internarum principalium humani corporis partium tabulae*, . . . (Nuremberg, 1572), pp. 124-125.

⁴⁶ E.g., J. C. Scaliger, *Exotericarum exercitationum liber* (Paris, 1557), ex. 296, p. 365; Bernardino Telesio, *Quod animal universa ab unica animae substantia gubernatur, adversus Galenum liber unicus* (Venice, 1590), fol. 23r.

⁴⁷ Gabriele Fallopio, *De partibus similaribus* in *Opera* (Frankfurt a.M., 1600), II, pp. 137-145; "glove," p. 138.

⁴⁸ See, e.g., André du Laurens, *Historia anatomica* (Paris, 1600), bk. 9, quests. 7-10, pp. 472-481.

sequence of events in the cardiac cycle. He, too, found the going rough at first, as he noted in the lectures: "I, by observing for hours at a time, have not easily been able to discern the matter by sight or touch. . . . See how difficult it is to discern either by sight or by touch what is dilatation or constriction, and the nature of systole or diastole."⁴⁹ Eventually, though, he succeeded in answering these and other questions about the movements of the heart and arteries, both to his own satisfaction, and to that of posterity as well.

Most important, Harvey had concluded by 1616 that the beat of the heart (i.e. of the ventricles) consists of only one active movement, during which the heart strenuously contracts and expels the contents of its ventricles into the pulmonary artery and aorta.⁵⁰ Following this, the heart relaxes and is passively distended by an influx of fresh blood from the vena cava and pulmonary veins, propelled by the contracting auricles. In response to auricular contraction the ventricles contract once again, or, as Harvey put it, "the auricles arouse the somnolent heart."⁵¹ As blood is expelled into the pulmonary artery and aorta they are mechanically distended, so that the pulsation of these vessels does not represent active movement. The heartbeat and arterial pulse thus consist of an orderly sequence of movements, beginning with auricular systole, proceeding through ventricular diastole and systole, to arterial diastole. Out of a complex controversy Harvey had reached conclusions that could be summarized with remarkable simplicity: "Action [of the heart]: thus relaxed receives blood, contracted scups it over; all the arteries of the body respond as my breath in a glove."⁵²

While Harvey's understanding of the action of the heart did not, as of 1616, extend to the idea of the general circulation, it did take for granted the pulmonary circulation. This is particularly clear in a somewhat longer summary of his conclusions about the movement of the heart:⁵³

From these things it is clear, in my opinion, that the action of the heart insofar as it is moved is [to transfer] blood from the vena cava to the lungs through the pulmonary artery, and from the lungs to the aorta through the pulmonary vein. When the heart is relaxed, which is first, there is an entrance of blood into the right

⁴⁹ Harvey, *Prelectiones*, p. 264.

⁵⁰ *Ibid.*, pp. 264-272, also analyzed by Pagel, *Harvey's Biological Ideas*, pp. 214-220, and by Whitteridge, *Harvey and the Circulation*, pp. 91-99.

⁵¹ Harvey, *Prelectiones*, p. 266.

⁵² *Ibid.*, p. 272.

⁵³ *Ibid.*, p. 270.

ventricle from the vena cava, and into the left ventricle from the pulmonary vein. When it is erected, or contracted, it forcefully propels [the blood] from the right [ventricle] into the lungs, and from the left [ventricle] into the aorta, whence the pulse of the arteries.

Obviously this scheme would be unworkable unless blood were to pass continually from the pulmonary arteries into the pulmonary veins, and in this sense the pulmonary circuit was, for Harvey, an essential corollary to his theory of the movement of the heart as applied to animals with four-chambered hearts. The lecture notes do not contain a separate, formal defense of the pulmonary circuit, but it is clearly taken for granted both here and in other parts of the lectures.⁵⁴ Moreover, it is quite possible that he would have explicitly defended the idea in the actual *viva voce* delivery of his lectures, since the notes on the heart include the separate heading, "An account of the transit of blood and how spirit is made," though it is not expounded in detail.⁵⁵

Thus the sub-section of Harvey's lectures on the heart entitled "Motus" comprehended a clearly defined cluster of ideas, centering on the nature and purpose of cardiac systole and diastole, but also including the arterial pulse and, by implication, the pulmonary circuit. And the conclusions reached by Harvey in this discussion represented the completion of a new cardio-arterial physiology, the culmination of the process inaugurated by Colombo. Thus where Galen's followers had viewed the heart and arteries primarily as a pneumatic system, Harvey now regarded them strictly as a sanguineous system. Where Galen had held that cardiac and arterial diastole and systole are all active motions, Harvey held that the only such movement is cardiac systole. And where Galen had maintained that the movements of the heart and arteries are primarily concerned with the ventilation of the innate heat, Harvey concluded that these movements are on the one hand the cause, and on the other hand the effect, of the transmission of blood from the vena cava to the arteries.

Once Harvey had reached these conclusions, he might well have regarded his investigation of the heart and arteries as a finished piece of work, and he probably rested content for some time with the fuller confirmation and elaboration of these ideas. Eventually, though, he

⁵⁴ See esp. *ibid.*, pp. 274-298.

⁵⁵ Harvey, *Prelectiones anatomiae universalis* (facsimile, London, 1886), fol. 76r, where this heading is clearly separated from the following brief remarks on the pores through the cardiac septum.

realized that in solving one set of problems he had created a whole new set that required even more radical solutions. As we have seen, Harvey had concluded that each pulse of the arteries represents a mechanical distention resulting from the impulsion of blood by the heart, and similarly that the return of the heart to its distended state following contraction results from the influx of fresh blood from the veins. Thus, implicit in his understanding of the heartbeat and pulse was the assumption that there is an irreversible transfer of a significant amount of blood from the veins to the arteries at each beat of the heart.

As long as Harvey's attention was focused on the events comprising the *individual* beat of the heart, he was apparently oblivious to the implications of such a large transmission over a longer term. But as he relates in chapter eight of *De motu cordis*, he eventually shifted his attention from the study of the individual heartbeat to a consideration of the cumulative effect of many such beats in succession. As a result, he came to see that over a relatively short time the heart would actually receive from the vena cava more blood than could be supplied by freshly ingested aliment or indeed by the entire contents of the venous system, and would propel into the arteries more blood than they could conveniently contain. Thus, given a large rate of transmission of blood we should expect to find the veins completely drained and the arteries filled to bursting, "unless the blood somehow permeates from the arteries back into the veins, and returns to the right ventricle of the heart."⁵⁶ Accordingly, Harvey continues, "I began to consider whether [the blood] might have a kind of motion, as it were, in a circle, and this I afterward found to be true."

As Walter Pagel has recently emphasized, the latter statement would seem to imply that a fairly clear notion of the circulation resulted directly from the investigation and pondering of the rate of cardiac transmission, and that subsequent investigation served largely to confirm the idea which Harvey had deduced.⁵⁷ To judge from chapters nine to thirteen of *De motu cordis*, he found three main sources of such confirmatory evidence, namely the fuller elaboration of the original quantitative argument, the use of ligatures to demonstrate that there actually is a passage of blood from the arteries to the veins at the periphery, and an investigation of the venous valves to demonstrate that

⁵⁶ Harvey, *De motu cordis* in *Opera* (London, 1766), p. 48. Unless otherwise indicated, all references to *De motu cordis* are to this edition and all translations are my own.

⁵⁷ Pagel, "William Harvey revisited," part I, *History of Science*, 1969, 8: 2-5.

the general direction of venous flow is, indeed, toward the heart. He also developed other, more theoretical arguments in support of the circulation.

We see, then, that Harvey's work gradually evolved from the consideration of a specific set of problems regarding the movement of the heart and arteries, to the discovery and confirmation of the circulation. He was initially concerned with a well-defined and long-standing problem in traditional physiology, namely the nature and interrelationship of the events comprising the heartbeat and pulse. Like so many of his predecessors, he probably regarded this at first as an important but essentially self-contained area of investigation, so that it would not have been immediately apparent to him that a reconsideration of the functions of the veins was the logical next step after completing the work on the heart and arteries. However, in the course of studying the heartbeat he came to assume that the heart must transmit blood from the veins to the arteries at a fairly high rate, and eventually he became aware of the quantitative difficulties inherent in such a high rate of transmission. After pondering these problems for some time, he conceived of the circulation as a possible means of solving them. He then looked for and found confirmation of the idea through a direct investigation of the movement of the blood in the peripheral arteries and veins.

II. William Harvey, *De motu cordis et arteriarum*

Thus far we have seen that Harvey was initially preoccupied with a careful study of the heartbeat and arterial pulse, and that only after a lapse of some time did he go beyond these early concerns to the discovery and confirmation of the circulation. These two stages in the growth of his work are reflected in both the title and the organization of his treatise *De motu cordis et sanguinis*, which is clearly divided into two great parts, the first dealing with the movement of the heart and arteries, and the second with the movement of the blood, or circulation *per se*. In chapters two through five Harvey presents, in a more developed form, the conclusions about the movements of the heart, arteries, and auricles which he had earlier set forth in his lectures.⁵⁸ In chapters six and seven he defends the pulmonary circuit of the blood,

⁵⁸ Whitteridge has analyzed the relationship between the lecture notes and the first half of *De motu cordis* in intro. to *Preflectiones*, pp. xlii-xlvi, and in *Harvey and the Circulation*, pp. 94-99, 115-118.

which is explicitly introduced as an essential corollary to the conclusions about the movement of the heart. At the beginning of chapter eight he clearly divides what has gone before in the treatise from what follows. He then introduces the quantitative argument to show that the blood must have a constant circular movement, and goes on to present a detailed defense of the circulation in chapters nine through sixteen.

It might seem to have been sound strategy for Harvey to treat the movement of the heart and the circulation in this compartmentalized manner, but I hope to show that considerations other than strategy played the dominant role in determining the organization of the treatise. For numerous peculiarities in its structure and content seem to indicate that chapters two through seven were actually written not as the first half of a treatise that would go on to discuss the circulation, but as the main body of a treatise dealing only with the movement of the heart and arteries. As we have seen, this was a well-defined area of controversy in traditional physiological thought, and was the central focus of extensive investigations in the earlier phase of Harvey's work. He had devoted a special section of his lectures to the heartbeat and pulse, and it would also have been quite reasonable for him to prepare a formal treatise on this subject alone, either before he had discovered the circulation, or even afterward, at a time when he was not yet sufficiently confident to reveal the full extent of his work. On this assumption, it would have been only at some later time that he added an account of the circulation to the pre-existing treatise on the movement of the heart, thus completing the full *De motu cordis et sanguinis* that was published in 1628.

Fundamental to my argument are two points about the structure and organization of *De motu cordis*. First, one can neatly divide the constituent sections of the treatise into two groups, those which treat the heartbeat, the arterial pulse, and the pulmonary circuit, but contain no references to the general circulation, and those which are explicitly concerned with the general circulation. Second, the sections which are "silent" with regard to the general circulation include not only chapters two through seven, where there might have been no reason to allude to it, but also two of the three introductory portions, as well as the concluding chapter. These sections ought logically to introduce and conclude the treatise as a whole, yet they are written as if to pertain only to the first half, and thus point to the existence of an earlier, more limited treatise for which they would have been more appropriate.

For our purposes, the treatise may be synopsized as follows, with the "silent" portions in roman type:

Letter to Argent: reasons for publishing a treatise on the movement of the heart and the circulation.

Proem: refutation of earlier views on the movement of the heart and arteries, and on the transit of blood from right to left ventricles.

Ch. 1: reasons for publishing a treatise on the movement of the heart and arteries.

Chs. 2-5: account of the movement of the heart and arteries.

Chs. 6-7: defense of the pulmonary circuit.

Ch. 8: introduction to the circulation.

Chs. 9-16: evidence in support of the circulation.

Ch. 17: anatomical evidence concerning the movement of the heart and arteries, and the pulmonary circuit.

It will be noted that none of the "silent" portions goes beyond Harvey's early interest in the heart and arteries to include material that pertains directly to the veins or to the general circulation, as distinct from these earlier concerns. In fact one could remove the letter to Argent and chapters eight through sixteen, and the residue would form a treatise on the heartbeat, the arterial pulse, and the pulmonary circuit, containing a Proem, an introduction, a main presentation, and a conclusion, all fully coherent within this more limited scope.

The clearest direct evidence that these parts of *De motu cordis* were originally intended to form such a self-contained treatise is to be found in the first chapter, where Harvey describes how he came to prepare the treatise which follows. Curiously, this chapter largely duplicates the introductory letter to Argent, except that the latter relates how Harvey came to publish a treatise on the movement of the heart *and the circulation*, whereas the avowed subject of the treatise discussed in chapter one is only the movement of the heart. In view of its importance I shall quote this brief chapter in its entirety, though interspersed with interpretive comments (all italics are mine).

Chapter one. The causes which moved the
author to write.

When first I set my mind to making observations, as opportunity offered, in numerous dissections of live animals, in order to discover *the use and functions of the movement of the heart* through autopsy and not through the books and writings of others; I kept finding the matter so truly hard and beset with difficulties that I all but thought, with Fracastoro, that *the heart's movement* had been understood by God alone. *For I could not rightly distinguish how systole and diastole came about, nor when or where constriction and dilatation occurred.* This

was because of the rapidity of the movement, which in many animals remained visible for but the wink of an eye, like a flash of lightning. Thus I sometimes thought I saw systole here, diastole there, and sometimes the reverse; sometimes the movements seemed to occur distinctly, sometimes confusedly. Hence my mind was all at sea, and I could neither reach my own conclusions nor believe what others said, so that it did not surprise me that André du Laurens wrote of *the movement of the heart* that it is like the flux and reflux of the Euripus were for Aristotle [i.e., a source of perplexity].⁵⁹

In view of the specificity of his comments, there can be little doubt that Harvey is thus far discussing only the early phase of his work, which centered on the old problem of discerning the events of the cardiac cycle.

He then goes on to describe how he saw the problems through to resolution:⁶⁰

But finally, through more concerted investigation and diligence, by frequently looking into many and varied animals, and by collecting many observations, I thought that I had attained my object and extricated myself from this labyrinth, and had discovered *both the movement and use of the heart and arteries, which is what I had desired*. In consequence I had no hesitation in propounding my view on this matter in private to friends and in public in my anatomical lectures, as is the academic custom.

Harvey now mentions the arteries as well as the heart as the object of his study, but from the beginning the movement of the arteries had formed an integral part of the dispute over the movement of the heart. Thus it appears that he is still referring only to the pre-circulatory phase of his work, which he is known to have presented in his public lectures as early as 1616.⁶¹ And in this paragraph he treats this work on the heartbeat and pulse as an essentially completed project, with no indication that he eventually extended his studies far beyond this initial scope.

Harvey next relates the outcome of the presentation of his views to others:⁶²

As happens, these views were acceptable to some, to others less so. The latter chastised me, calumniated me, and condemned me for having departed from the

⁵⁹ Harvey, *Opera*, p. 21; tr. based in part on that of K. J. Franklin in William Harvey, *The Circulation of the Blood and Other Writings* (Everyman's Library, London and New York: Dent and Dutton, 1966), p. 23.

⁶⁰ Harvey, *Opera*, p. 21; tr. adapted partly from that of Franklin, p. 24.

⁶¹ Harvey, *Prelectiones*, pp. 264-272.

⁶² Harvey, *Opera*, p. 22; tr. based on Franklin, p. 24.

teachings and beliefs of all the anatomists; the former, avowing that the new doctrine would be both worthy of investigation and extremely useful, asked me to *expound the matter more fully*. Finally, moved partly by the pleas of my friends, that all might become beneficiaries of my labors, but partly also by the ill-will of the others who, receiving my statements with biased minds and imperfectly understanding them, kept trying to make a public laughing stock of me, *I have been forced to publish these things in print* so that all may pass judgement upon me and upon the matter in question.

Harvey has now reached the stage of preparing a treatise intended for publication, but its subject would seem to be only the movement of the heart and arteries, since this is the only subject of investigation and controversy that he has so far mentioned. Thus from his own account it would appear that he did in fact write a separate treatise on the heartbeat and pulse after completing his investigations in that area. By implication the treatise in question is the one which immediately follows chapter one, namely chapters two through seven, which can quite appropriately be viewed as a "more fully expounded" version of the conclusions which Harvey had presented in his lectures.

Harvey concludes chapter one by giving additional reasons for the publication of his findings:^{6 3}

[I have come to publish my views] the more readily in that Hieronymus Fabricius of Aquapendente, after having dealt carefully and learnedly *in separate treatises* with almost all the parts of animals, left only *the heart* untouched. Finally, I have published so that, if something useful and serviceable should accrue to the republic of letters through my work in this field, it might perchance be acknowledged that I have done rightly; also that others might see that I have not lived idly; and that the words of the old man in the comedy,

No life so perfect ever but that circumstance,
Increase of years, experience can changes bring;
Your so-thought knowledge be but ignorance; those things
That you believed the finest fail to pass the test,

may perchance prove true now in respect of *the heart's movement*; or at least that others, given this lead, and relying on more productive talents, may find an opportunity to carry out the task more accurately and to investigate more skilfully.

Thus Harvey is offering his work as an original contribution to learning, but here as in the rest of chapter one he mentions only the heart and its movement as the subject of his treatise and the area of his innovation.

Taken at face value, then, chapter one would seem to describe the following sequence of events: Harvey's initial, confused investigation of

^{6 3} Harvey, *Opera*, p. 22; tr. Franklin, pp. 24-25, slightly altered.

the problems of cardiac systole and diastole; his eventual resolution of these problems; the presentation of his conclusions in private to friends and in public to the College of Physicians; controversy within the College over his views; and the preparation of a treatise for the formal publication of this work. If he had intended to announce the discovery of the circulation in the treatise introduced by chapter one, then it is difficult to understand why he should exclude this important event from the sequence, or why the whole discussion of motivation for writing should not center at least as much around the circulation as around the movement of the heart. Indeed, in the letter to Argent he clearly points to the circulation as his main contribution to learning, while in chapter eight he actually dismisses his earlier work as being of only slight originality compared to the discovery of the circulation.⁶⁴ Thus chapter one seems quite anomalous, unless we suppose that at the time he wrote it Harvey actually intended to deal only with the movement of the heart in his treatise.

Strong corroborating evidence for such a limited treatise occurs in the long Proem immediately preceding chapter one. Here Harvey prepares the way for his own views by a thorough refutation of the conflicting views of his predecessors, especially Galen. The scope of the Proem, and presumably of the treatise which it introduces, is stated quite clearly in its title: "Proem, in which is demonstrated the unsoundness of what has previously been written about *the movement and use of the heart and arteries*" (p. 9, my italics). Harvey likewise indicates the specific aims of his investigation in the opening paragraph (p. 9):

For someone who is considering *the movement, pulse, action, use, and functions of the heart and arteries*, it is worthwhile to examine what has previously been written by others, to take note of what is commonly handed down and expounded, so that what is correct might be confirmed, and what is false emended, by anatomical dissection, multiple experiments, and diligent and accurate observation [my italics].

And the closing statement of the Proem suggests even more strongly that it was originally intended to introduce a treatise dealing only with the movements of the heart and arteries (p. 19):

Thus from these and many other similar considerations it is clear that it would be very useful to look into the matter a little more deeply, since what has previously been said about *the movement and use of the heart and arteries* appears to be either

⁶⁴ Harvey, *Opera*, pp. 5-6, 47-48.

incongruous, or obscure, or impossible to someone who considers it carefully. It would be useful, I say, to contemplate *the movement of the arteries and of the heart not only in man, but in all other animals having a heart*, and to discern and investigate the truth through frequent dissections of live animals and numerous observations [my italics].

The second italicized clause is quite a good description of chapters two through seven of *De motu cordis*, but it hardly does justice to the full treatise, in which much more than a new theory of the movements of the heart and arteries was announced to the world.

Moreover, these descriptions of the scope of the Proem correspond quite well to its detailed contents, which in turn anticipate the subjects dealt with in chapters two through seven, but not those in eight through sixteen. Thus Harvey prepares the way for his own views on the heartbeat and pulse (chapters two through five) by thoroughly refuting the views of Galen, especially the idea that these movements serve a ventilating function similar to that of respiration (pp. 9-17). He also argues against the passage of blood through the cardiac septum (pp. 17-19), in anticipation of his defense of the pulmonary circuit (chapters six and seven). But Harvey says not a word in the Proem against the idea of centrifugal flow of venous blood, even though one of his principal aims in the second half of *De motu cordis* would be to establish the opposing concept of centripetal venous flow. He could easily have cited such things as the evidence of ligatures and of the venous valves for the purely negative purpose of refuting the outward movement of venous blood, but he does not do so. In fact, the Proem contains no statements which even imply opposition to centrifugal venous flow or a knowledge of the circulation.⁶⁵

Just as the Proem and chapter one are written as if to introduce a treatise dealing only with the heartbeat, the arterial pulse, and the pulmonary circuit, so also chapter seventeen is written as if to conclude such a treatise. For in this, the final chapter of *De motu cordis*, Harvey presents an abundance of anatomical evidence to confirm the conclusions of chapters two through seven, but does not so much as mention the general circulation, centripetal venous flow, the venous

⁶⁵ Whitteridge (*Harvey and the Circulation*, p. 114) states that the Proem could only have been written after the circulation had been conclusively proven, but does not give the grounds for this assertion. In fact, most of the anti-Galenic arguments in the Proem were not original to Harvey, but had been used by various of his predecessors, who obviously could not have relied on a knowledge of the circulation.

valves, or other ideas found only in chapters eight through sixteen.⁶⁶ We thus find Harvey concluding chapter seventeen, and hence the entire *De motu cordis*, with a review of evidence for the pulmonary circulation, but without the slightest reference to the general circulation. And once again, the very existence of a concluding chapter having this curious limitation of scope seems to point to Harvey's having actually written an earlier, more limited treatise, for which this conclusion would have been appropriate.

The Proem, chapters one through seven, and chapter seventeen not only share the same overall scope, but are all closely interrelated by many specific thematic links. In addition to refuting earlier ideas about the heartbeat, arterial pulse, and transit of blood, the Proem also briefly anticipates the positive conclusions set forth in chapters two through seven and seventeen; similarly, chapters two through seven refer back to some of the negative conclusions of the Proem; and chapter seventeen picks up and develops many specific themes that are adumbrated in the Proem and chapters two through seven, its relationship to chapter four being particularly close in this respect.⁶⁷

Chapters eight through sixteen show a similarly high degree of internal coherence. Chapter eight provides a general introduction, partly historical, to the basic quantitative argument and the idea of circulation. Chapter nine begins with an outline of the arguments in support of the circulation, which are then developed in chapters nine through thirteen, and summarized in chapter fourteen. Chapter fifteen elaborates some ideas on the purpose of the circulation which had been introduced in chapter eight, while chapter sixteen presents an additional body of miscellaneous evidence, some of it anatomical, in support of the circulation.

⁶⁶ Whitteridge, intro. to *Prelectiones*, pp. xlv-xlvi, has pointed out that the contents of chapter 17 do not relate directly to the circulation, and that in fact many of the topics discussed here are already to be found in the lecture notes of 1616.

⁶⁷ Themes common to the Proem, chapters 1-7, and chapter 17: the blood in the pulmonary veins and left ventricle (Harvey, *Opera*, pp. 14, 16, 36, 87); quantitative argument in support of pulmonary circuit (pp. 15, 16, 43, 47, 87); the fetal heart (pp. 18, 38-41, 46, 71, 84); the fish heart (pp. 14, 47, 78); the example of the sponge (pp. 12, 43, 82). Common to Proem and chapters 1-7: mechanical arterial pulse (pp. 13, 26); Galen on blood in arteries (pp. 11, 35-36); aneurysm (pp. 14, 27); against pores in septum (pp. 17, 36); need for comparative approach (pp. 19, 21, 37). Common to Proem and chapter 17: differences between arteries and veins (pp. 13-14, 85-86, 87). Common to chapters 1-7 and 17 (excluding numerous parallels between chapters 4 and 17): heart like a muscle (pp. 23-24, 84); cordae tendineae (pp. 25, 79-80); treatise on respiration (pp. 41-42, 82).

By contrast, the links between these two great divisions of *De motu cordis* are much looser, and tend to be unidirectional: chapters eight and nine contain a number of specific references back to the first half of the treatise, while chapter sixteen refers ahead to chapter seventeen;⁶⁸ but neither the first half nor chapter seventeen contains any such specific references forward or back to chapters eight through sixteen, nor do they otherwise anticipate or recapitulate the special themes of those chapters.⁶⁹ The most glaring instances of this asymmetry are the failure of the Proem to refute previous ideas about the veins, and the lack of anatomical evidence in support of the circulation in chapter seventeen. A more subtle result can be seen in chapters nine and ten, where in order to prove the circulation Harvey finds it necessary to establish some points about the heartbeat that were not adequately developed in the first half of the treatise.⁷⁰

Furthermore, the two great divisions of *De motu cordis* reveal some major differences in method and strategy which tend to corroborate the idea that they were conceived and executed more or less independently of each other, rather than as a unified whole. As we have seen, Harvey stresses in the Proem the need for studying the heart "not only in man, but also in all other animals with hearts" (p. 19). This principle is reiterated and abundantly fulfilled throughout the "silent" portions, especially in chapters four, six, and seventeen. But in chapters eight through sixteen he largely abandons this broad comparative approach in favor of a concentration on man and a few other mammals. The only significant exception is in chapter ten, where he presents evidence of the rate of cardiac transmission in fish and snakes (pp. 53-4), but neither here nor elsewhere does he describe the complete circulation in these animals.

Similarly, in the Proem Harvey points to the need to take account of the views of one's predecessors (p. 9), and throughout the first half of *De motu cordis* he fully emphasizes the antithesis between his own ideas on the heart and arteries and those of Galen. He not only refutes Galen point by point, but uses Galen's observations and even his very

⁶⁸ *Ibid.*, pp. 47, 49, 50, 51, 53; p. 76.

⁶⁹ However, a possible anticipation of ch. 15 occurs in ch. 5 (p. 34), where Harvey says he will later take up the question of whether the heart adds anything to the blood, in addition to transmitting it.

⁷⁰ Heart always expels something (pp. 50, 51, 53); arteries receive blood only from the heart (p. 53). These points are, as Harvey says, implicit in his earlier discussion, but they are not made explicit, as they might have been had he anticipated attaching major importance to them.

words in support of his own conclusions.⁷¹ However, in the letter to Argent (which was clearly written to introduce the full treatise) Harvey declares his intention *not* to enter into the views of his predecessors, and accordingly in chapters eight through sixteen he abruptly ceases to use Galen as a foil.⁷² For the most part he now simply presents and defends his own views, leaving it to the reader to infer their anti-Galenic implications.

There is, then, considerable evidence that the two great divisions of *De motu cordis* were written at different times, under different circumstances, and with different ends in view. The Proem, chapters one through seven, and seventeen constitute a rather exhaustive treatment of the movements of the heart and arteries and the pulmonary circuit, including a detailed refutation of earlier views and a full account of Harvey's own observations and conclusions, all buttressed by a wealth of comparative anatomical data. Chapters eight through sixteen are, by contrast, more Spartan in character. Here Harvey focuses almost exclusively on the positive defense of the circulation, based above all on the quantitative argument in addition to a few simple experiments, most of them involving only the application of ligatures to the uninjured human arm.

Thus it would appear that *De motu cordis*, like the work which it reports, evolved in two distinct stages. Originally, Harvey seems to have written a self-contained treatise on the heartbeat and arterial pulse. Subsequently he changed his plans and decided to include the circulation as well. He then inserted chapters eight through sixteen into the earlier work, prefixed the letter to Argent as a new introduction to the expanded treatise, and thereby transformed an important work into one of the greatest scientific masterpieces of all time.

The evolution of *De motu cordis* in such distinct stages would fit the pattern of composition that recent scholarship has revealed for Harvey's two other published works, *De generatione* and *De circulatione* (the responses to Riolan). Webster has found substantial evidence, both external and internal, for the existence of a Harveian treatise on

⁷¹ Harvey, *Opera*, pp. 9-19, 35-36, 44-46. See also J. F. Payne, *Harvey and Galen* [The Harveian Oration for 1896] (London, 1897), esp. pp. 26-51; and Frederick G. Kilgour, "Harvey's use of Galen's findings in his discovery of the circulation of the blood," *J. Hist. Med.*, 1957, 12: 232-234.

⁷² Harvey, *Opera*, pp. 7-8. Harvey mentions Galen by name only three times in these chapters (pp. 47, 49, 52), none of which are hostile in tone.

generation that was read in manuscript by friends as early as 1638.⁷³ This early treatise seems to have formed the basis of the work published in 1651, though the latter also included material that could only have been added some time after 1638. And from internal evidence Whitteridge has argued persuasively that Harvey's second disquisition to Riolan was probably written before the first and even before the publication of Riolan's critique in 1648.⁷⁴ It is actually a general response to critics other than Riolan, but was subsequently given the appearance of a reply to the latter merely by the addition of new introductory and concluding paragraphs. It was then published in 1649 together with the first disquisition, which clearly was written with Riolan in mind. Moreover, Harvey's anatomical lecture notes provide an even closer parallel to the two-stage composition of *De motu cordis* that I have proposed. For here is an actual case where Harvey had written a self-contained discussion of the movement of the heart and arteries, to which, after a lapse of perhaps ten years, he added an account of the circulation, on what had been a blank page in the original manuscript.⁷⁵

The important question remains, however, of how complete is the parallel between the lecture notes and *De motu cordis*. The original lecture notes were written when Harvey was still ignorant of the circulation. Was this true of the "silent" portions of *De motu cordis* as well? Or was this silence a deliberate contrivance by a man who had the circulation in mind, but was hesitant about the publication of this idea along with the work on the movement of the heart? We cannot answer these questions with complete certainty, but I believe that we can reach at least a probable estimate of the state of Harvey's thought when he wrote the earlier parts of *De motu cordis*.

III. Before or after the discovery?

In trying to determine whether Harvey knew of the circulation when he wrote the earlier portions of *De motu cordis*, the obvious means would be to see whether they contain any specific statements which directly indicate his ignorance or knowledge. We have already noted, however, that these sections are lacking in direct references to the

⁷³ C. Webster, "Harvey's *De generatione*: its origins and relevance to the theory of circulation," *Brit. J. Hist. Sci.*, 1967, 3: 262-274.

⁷⁴ Whitteridge, *Harvey and the Circulation*, pp. 186-188.

⁷⁵ Whitteridge, intro. to *Prelectiones*, pp. 1-li, and p. 272, note b.

circulation. On the other hand they also contain no glaring contradictions of the idea, which is not surprising since even if such statements had occurred in the original text, Harvey would probably have eliminated them prior to publication. Thus while we do find some statements that have a bearing on the question of Harvey's ignorance or knowledge of the circulation, they are mostly in the nature of passing remarks or indirect allusions whose implications are not easy to fathom.

But although this kind of direct, specific evidence is rather limited both in quantity and quality, we can enhance and supplement it considerably by a somewhat broader approach, one which can be illustrated by an example from the work of Charles Darwin. Darwin had developed most of the essentials of his theory of evolution by the early 1840s, but before revealing these ideas he went on to publish four volumes on the taxonomy of the cirripedes. He avoided all direct references to evolution in this monograph, but Ghiselin has recently pointed out that it nevertheless reveals many instances of reasoning that are implicitly based on the concept of evolution, especially if it is read in the light of Darwin's evolutionary writings.⁷⁶ Similarly, the circulation was, for Harvey, an idea that had many implications beyond its explicit content. In particular, it is clear from chapters eight through sixteen of *De motu cordis* that no aspect of physiology was more profoundly illuminated by the discovery than Harvey's own earlier work on the heartbeat, the arterial pulse, and the pulmonary circuit. Thus by seeing just how his ideas in these areas were influenced by knowledge of the circulation, and then studying the earlier discussion in this light, it should be possible to gain some additional insight into whether he already viewed these matters from this new perspective when he wrote the original portions of the treatise.

Both these approaches seem to show that Harvey probably did not have the circulation in mind when writing his early treatise on the movement of the heart. The evidence is not entirely one-sided, however, so that we shall have to take into consideration some possible allusions to the circulation in these parts of *De motu cordis*. I think it can be plausibly demonstrated that the clearest of these statements was a later interpolation in the text, and that the others do not necessarily reflect a knowledge of the circulation, but can be satisfactorily accounted for on other grounds. Thus there are no solid indications

⁷⁶ Michael T. Ghiselin, *The Triumph of the Darwinian Method* (Berkeley and Los Angeles: University of California Press, 1969), pp. 103-130, esp. p. 105.

that Harvey did know of the circulation when he wrote the original portions of the treatise, while on the other hand there is a fairly large and diverse body of evidence which seems to show that at this time he was still as ignorant of the idea as when he prepared his anatomical lecture notes in 1616.

As was true in the case of the lecture notes,⁷⁷ Harvey's statements about the functions of the liver and veins should be the most sensitive index of his knowledge of the circulation, since the discovery entailed a clear break with traditional views on these organs. In Galenic physiology, the liver was the generating source of the venous blood, which gradually moved outward through the veins to nourish the parts of the body; even the heart was dependent on the liver for the blood that it took up from the vena cava. The discovery of the circulation involved the rejection of this gradual outward movement of venous blood from the liver, in favor of a rapid inward movement from the entire body to the heart. Furthermore, on the basis of the circulation Harvey denied to the venous blood any direct role in the nutrition of the body, which was now assigned exclusively to the arterial blood (p. 49). And the liver not only lost its role as the direct source from which blood was supplied to the veins and the heart, it was also deprived of much of its importance as the original generating source of fresh blood. For in Harvey's later view, it was the preexisting blood circulating through the mesenteric vessels, rather than the flesh of the liver, that played the crucial role in assimilating freshly absorbed chyle to the nature of blood.⁷⁸

But although Harvey's views about the liver and veins ought, in theory, to provide the clearest evidence of his ignorance or knowledge of the circulation, we are faced with the practical difficulty that throughout the "silent" portions of *De motu cordis* he was not directly concerned with these organs, but only with the heart and arteries. Thus while he did make a variety of references to the liver and veins, these are mostly brief statements made incidentally to other points. As a result, it is difficult to be sure just what these statements might imply, and whether these implications actually reflect Harvey's considered opinion. But despite these limitations, I believe that we can gain

⁷⁷ Whitteridge, intro. to *Prelectiones*, pp. xlvii-xlix.

⁷⁸ Harvey, *Opera*, pp. 73-74. I have discussed this matter in "Cesalpino and Harvey on the portal circulation," in Allen G. Debus, ed., *Science, Medicine and Society in the Renaissance. Essays to Honor Walter Pagel* (2 vols., New York: Science History Publications, 1972), II, 39-52.

sufficient insight from Harvey's various statements about the liver and veins to warrant careful consideration of them before going on to other kinds of evidence.

One of these statements is of particular importance since it seems to contain a fairly clear allusion to general centripetal venous flow. It occurs in chapter four, in a parenthetical reference to the process of auricular filling (p. 29):

(but [the auricles] are refilled like storehouses and lakes of blood, with the blood flowing in both spontaneously [*sponte*], and as compressed toward the center by the movement of the veins.)

This statement seems to foreshadow chapter fifteen, where Harvey gives the chief reasons for the constant centripetal movement of the venous blood (p. 72):

First, because the blood of its own accord [*sponte sua*] is easily concentrated, and comes together, as toward its principle. . . . And also because the blood is squeezed from the capillary veins into the smaller branches and from there into the larger ones by the movement of the members and the compression of the muscles, so that the blood is more inclined to move from the circumference to the centre than the contrary.

This statement is made in an avowedly circulatory context, and the statement in chapter four would also seem to reflect a knowledge of the circulation, since it too assumes a general movement of venous blood "toward the center."

Thus we seem to have here a good example of a statement which, while not referring directly to the circulation, is clearly based on the idea. It is, however, the only such unmistakable instance in the "silent" parts of *De motu cordis*, and it also shows signs of being a later interpolation in the text. Not only is it a brief, parenthetical statement, but it also occurs rather inappropriately in the middle of a sentence having to do with auricular emptying, rather than refilling.⁷⁹

Auriculae enim dum moventur, & pulsant albidiores fiunt, praesertim ubi pauco sanguine replentur (replentur autem tanquam promptuarium, & lacuna sanguinis, declinante sponte sanguine, & venarum motu compresso ad centrum) quin etiam in finibus, & extremitatibus ipsarum haec albedo a contractione fieri, vel maxime apparet.

Leaving out the parenthetical statement we are left with the following sentence: "When the auricles are moved and pulsate, they become

⁷⁹ Harvey, *De motu cordis* (Frankfurt a.M., 1628), pp. 26-27.

whiter, especially where they contain little blood (. . .), indeed it is in their tips and extremities that this whiteness results from contraction, or is especially apparent." There is a strong logical nexus between the two portions, but the reference to the refilling of the auricles is irrelevant to the subject of their whitening during contraction and thus disrupts the line of thought. The only apparent rationale for its inclusion here is as a gloss on *replentur*, the word which it immediately follows and with which it begins. However, even for this purpose it is inappropriate, since the first *replentur* is used simply in the static sense of "are filled" or "contain," while that in the parentheses refers to the actual process of refilling.

It seems to me unlikely that Harvey would have committed such errors of semantics and logic by including the parenthetical clause in the original draft of this passage. But at some later time he might well have skimmed over the text and, his eye falling on the word *replentur*, he might have added a brief description of how the auricles become refilled, unmindful that the explanation was inappropriate to the sense in which he had originally used the word, or indeed to the general thrust of the passage.⁸⁰ Thus while he very probably had the circulation in mind when he wrote this particular statement, this does not mean that he already knew of it when he originally wrote chapter four.

Quite the contrary, a variety of other statements suggest that in fact Harvey's ideas about the liver and veins were still quite conventional when he first composed the early parts of *De motu cordis*. On one occasion he refers explicitly to the outward flow of material through the veins, thus contradicting directly the idea of universal centripetal venous flow. This is in chapter seven, where he traces the passage of excess fluid from the stomach to the urinary bladder along the following pathway: "through the liver, . . . through the veins, through the parenchyma of the kidneys, through the ureters, to the bladder" (pp. 42-3)—a direct venous pathway to the kidneys that would not be possible on the assumption of the circulation. On three other occasions he makes statements that seem to be based on the assumption that venous blood moves outward to nourish the parts of the body. Thus, further on in chapter seven he states that in order for nutrition to occur, nutriment must be able to permeate from the portal vessels, through the substance of the liver, "into the veins (*in venas*)," a plural

⁸⁰ Harvey's habit of making later interpolations in his writings is well attested by his surviving manuscripts.

usage which seems to imply a flow of nutriment from the liver to the veins in general, rather than just to the ascending vena cava (pp. 43-4). In the Proem he refers to both the coronary artery and coronary vein as sending branches to the cardiac septum "for its nutrition" (p. 18). And again in the Proem he argues against the idea that the pulmonary artery simply nourishes the lungs on the grounds that this vessel is too large and would bring too much blood for this purpose alone; indeed, "it exceeds in size both the crural branches of the descending vena cava" (p. 15)—a comparison which makes sense only on the assumption that these venous trunks do convey nutritive blood to the legs.

Harvey had made similar references to centrifugal venous flow in his anatomical lecture notes, and there is also some additional evidence that when he wrote the original parts of *De motu cordis* his ideas about the veins were essentially the same as in 1616. Already at this earlier time Harvey had directed his attention to the relationship between the structural and functional differences between arteries and veins. His view seems to have been that arteries and veins both convey nutritive blood to the parts of the body, the only difference being that the arteries must sustain the impetus of blood impelled by the heart, as a result of which they have thicker tunics than veins.⁸¹ He also discussed this matter in chapter eight of *De motu cordis*, but here the impact of the circulation is clearly reflected in his assertion that there are two fundamental differences of function between arteries and veins quite unrelated to structural differences and the matter of pulsation, namely that they convey blood in opposite directions, and that only the arteries contain blood that is suitable for nutrition (p. 49). In chapter seventeen Harvey presented a fuller treatment of this question, but significantly the basis of the discussion here seems to be the same as that in the lecture notes, namely that the pulse constitutes the only significant difference between arteries and veins (pp. 85-6). He noted that the finest branches of the arteries sustain little or no pulse and therefore have thin, veinlike tunics, so that "they seem to be veins not only in structure, *but also in function* [*non solum constitutione, sed et officio*], since they show no sensible pulse at all, or only occasionally" [my italics].

The liver likewise seems to be accorded much of its traditional significance in the "silent" parts of *De motu cordis*. Thus in chapters five (pp. 35-6) and seven (pp. 42-4) Harvey appears to endorse the idea

⁸¹ On similarities, Harvey, *Praelectiones*, e.g., pp. 98, 100, 158, 176, 180-182; on differences, pp. 270, 272.



of a two-stage concoction of the blood, first in the liver, then in the heart and lungs, prior to its distribution through the arteries. It could be argued that in these chapters he had strategic motives for attributing this role to the liver, but again, in chapter seventeen, in defending the primacy of the heart, he seems to concede that in mature animals the heart depends upon the liver for its blood, even though in this context the admission was somewhat detrimental to his case.⁸²

Thus on a number of occasions, in a variety of different contexts, Harvey made statements about the liver and veins that are quite consistent with pre-circulatory ideas, and in particular with his own earlier views as set forth in his lecture notes. And some of these statements, namely the allusions to centrifugal venous flow, are not merely consistent with the older views, but clearly inconsistent with the idea of circulation.

The only possible exceptions to this pattern occur in chapters five, six, and seven, where Harvey repeatedly describes the action of the heart as the transmission of blood "from the veins to the arteries." The use of the plural "from the veins (*e venis*)" must arouse our suspicion, since in pre-circulatory physiology the heart was usually said to receive blood only from the vena cava—the other veins were concerned with transporting blood to the periphery, not to the heart. In particular, the plural "from the veins" does not seem to occur in Harvey's earlier lecture notes, whereas it does occur in the later parts of *De motu cordis*, where Harvey obviously had the circulation and general centripetal venous flow in mind.

But while Harvey's use of the plural "from the veins" in chapters five, six, and seven might suggest that he also wrote these chapters with the circulation in mind, it does not lead unmistakably to this conclusion. For while this plural usage is perhaps more consistent with the idea of circulation than with earlier notions, it is not directly contradictory of the earlier views nor uniquely explicable by the idea of circulation. As we have seen, in chapter seven (p. 43) Harvey refers to the need for a passage of nutriment from the liver "to the veins (*in venas*)"; he could, therefore, envision a subsequent movement "from the veins (*e venis*)" to the heart, without having to assume the circulation. And while such an expression would indeed have been

⁸² Harvey, *Opera*, pp. 84-85. This discussion, where the primacy of the heart is made to depend chiefly upon its first appearance in embryonic development, should be compared with chapter 15, where the heart's primacy is derived above all from its maintenance of the circulation.

rather unusual among the Galenists, there was among the Artistotelians an ancient tradition of saying that "the veins" convey blood to the heart, even though they apparently meant by this no more than the transport of blood from the liver to the heart.⁸³ Moreover, at the beginning of chapter eight Harvey himself states that in his preceding discussion "*de transfusione sanguinis e venis in arterias*" he had in mind no more than would have been admitted by Colombo and his followers, for whom the question of the general circulation would not have arisen (p. 47).

Furthermore, while the plural "from the veins" is found in the later parts of the treatise as well as in chapters five through seven, there is a difference between the two portions with regard to the consistency with which Harvey uses the plural. In chapters five through seven this usage is largely confined to the longer phrase "from the veins to the arteries," which is employed on nine occasions to describe the transmission of blood by the heart.⁸⁴ Even for this purpose Harvey does not always use the plural, since four times in these chapters we find the singular counterpart "from the vena cava to the aorta," and once the mixed expression "from the vena cava to the arteries."⁸⁵ Outside of the longer expression the plural "from the veins" occurs only once, whereas on nine occasions we find the singular "from the vena cava."⁸⁶ In chapters eight through sixteen, by contrast, Harvey quite consistently uses the plural both in and out of the longer expression, with only an occasional lapse into the singular "from the vena cava."⁸⁷ Thus in chapters five through seven, unlike the later parts of the treatise, we seem to be dealing not so much with a consistent

⁸³ See esp. Themistius, *Paraphrasis in Aristotelis . . . de somno et vigilia . . .*, tr. Hermilao Barbaro (Venice, 1542), ch. 13, p. 348: "Ac venae quidem aliae cor adeunt, aliae a corde proveniunt. Venae quae adeunt cor, tanquam ministrae ac gerulae sunt, ut quae a iecinore ad cor incoctum & imperfectum sanguinem convehant, quem cor susceptum sua vi meracum & absolutum sanguinem reddit. At venae quae a corde pertinent, comparatae ad alium usum sunt, videlicet ut succus per eas concoctus iam perfectusque in totum corpus distribuatur atque dedatur." This statement is echoed by Bassiano Landi, *Anatomiae corporis humani . . . Libri duo* (Frankfurt, 1605; original edition, Basel, 1542), p. 119; and perhaps also by Cesalpino, *De plantis libri xvi* (Florence, 1583), p. 3: "Nam in animalibus videmus alimentum per venas duci ad cor tanquam ad officinam caloris insiti, & adepta inibi ultima perfectione per arterias in universum corpus distribui, . . ." On Cesalpino, see also Pagel, *Harvey's Biological Ideas*, pp. 169-171.

⁸⁴ Harvey, *Opera*, pp. 34 (3 times), 36 (2), 37, 38 (2), 46.

⁸⁵ *Ibid.*, pp. 40, 41, 46 (2); p. 37.

⁸⁶ *Ibid.*, p. 44; pp. 38, 39 (2), 40 (2), 41, 46, 47 (2).

⁸⁷ *Ibid.*, e.g., pp. 47-54, *passim*, 57, 63, 64, 72; lapses, pp. 50, 63.

assumption of general centripetal venous flow, as with a specific tendency to describe the function of the heart as the transmission of blood "from the veins to the arteries."

And it is possible to suggest a specific reason, unrelated to the circulation, why Harvey might have preferred this description of the heart's action, namely that he wished to underscore his opposition to a particular Galenic doctrine. It was noted above that throughout the first half of *De motu cordis* Harvey was concerned almost as much with refuting Galen's ideas on the functions of the heart and arteries as with the establishment of his own alternative views. In preparation for this task he seems to have carefully re-examined the relevant Galenic texts (in the standard Latin translations), since he not only refuted Galen point by point, but sometimes quoted Galen's own observations and experiments as the basis of his refutation, and even expressed his anti-Galenic conclusions in Galen's own words.⁸⁸ For example, in chapter three he summarized his own views about the cause of the arterial pulse by reversing the Galenic formula: "The arteries are distended because they are filled, like sacks or bladders; they are not filled because they are distended, like bellows."⁸⁹

Similarly, Harvey may have adapted Galen's own language in order to emphasize his disagreement with him over the source of the blood in the arteries and the means of its transmission. According to Galen, blood enters the arteries primarily by being drawn in during active arterial dilatation, and it is drawn not only from the heart, but from veins throughout the body via minute anastomoses.⁹⁰ Galen adopted the idea of arterio-venous anastomoses from Erasistratus, although the latter had maintained that blood actually enters the arteries from the veins only under pathological conditions, a view which Galen strongly opposed.⁹¹ Thus both in presenting his own view and in refuting that of Erasistratus, Galen himself had fairly frequent occasion to refer to the passage of blood "from the veins to the arteries," as in the following instances:⁹²

⁸⁸ *Ibid.*, pp. 10-13, 16-17, 28, 35-36, 44-47. See also Payne, *Harvey and Galen*, and Kilgour, "Harvey's use of Galen" (n. 71, above).

⁸⁹ Harvey, *Opera*, p. 26, and, e.g., Galen, *An sanguis*, ch. 7, *Opera omnia* (Venice: Giunta, 1597), vol. I, fol. 62v.

⁹⁰ See above, note 20.

⁹¹ E.g., Galen, *De usu part.*, bk. 6, ch. 17, tr. May, pp. 321-322; and *An sanguis*, *passim*.

⁹² Galen, *Nat. facts.*, bk. 3, ch. 15, *Opera* (1597), vol. I, fol. 307v; *De usu puls.*, ch. 5, fol. 228r; *De usu part.*, bk. 6, ch. 17, fol. 155r; *ibid.*, *An sanguis*, ch. 2, fol. 60v; *ibid.*, ch. 4, fol. 61v; *ibid.*

ex venis in arterias transferatur aliquid
 per hos transitus arteriae dilatatae ex venis trahunt
 sanguine ex venis in arterias incidente
 prius in venis confectum sanguinem arterias transumere
 transfusio [of blood from veins into arteries]
 e venis in arterias . . . sanguis transit
 sanguinem totum in arterias e venis transfundi

In contrast to Galen, Harvey maintained that venous blood reaches the arteries only by way of the heart, and that the heart alone plays an active role in its transmission. He devoted much of chapters five, six, and seven to establishing this function of the heart, and it was in this context that he referred so repeatedly to its role in transmitting blood "from the veins to the arteries." And the language he used seems to suggest that he had in mind the antithesis between his own view and the Galenic doctrine of peripheral transmission from veins to arteries:⁹³

transfusio sanguinis e venis in arterias (used twice)
 cordis motibus fit portionis sanguinis e venis in arterias traductio
 in pulsu cordis sanguinem transfundi et deduci e venis in arterias
 sanguis e venis in arterias transferri
 e venis in arterias sanguinem pulsu cordis tranductum esse
 sanguis e venis in arterias transire
 sanguinem . . . e venis in arterias per cordis sinum transmitti
 transitu sanguinis de venis per cor in arterias

Thus not only the phrase *e venis in arterias*, but also the associated words *transferre*, *transire*, *transfundere*, *transfusio*, and *transitus* are found in Galen as well as in Harvey, but with the significant difference that Harvey stresses the importance of the heart in this transmission.

Harvey does not acknowledge the anti-Galenic intent of this language in chapters five, six, and seven themselves, but he does seem to do so later on, in chapter nine. Here he seeks to flatly disprove the passage of venous blood into the arteries at the periphery, and in doing so he asserts that his opposition to this view was already implicit in the first part of the treatise: "But it is clear from what has been said above that the arteries nowhere receive blood from the veins, except by the transmission that takes place through the heart [*arterias autem nullibi*

⁹³ Harvey, *Opera*, pp. 34 and 36; 34; 34; 36; 37; 38; 38; 46.

sanguinem e venis recipere, nisi transmissione facta per cor].”⁹⁴ And a few sentences on he repeats the dictum, “There is nowhere a transit from the veins to the arteries, except through the heart itself and through the lungs [*de venis in arterias nullibi datur transitus, nisi per cor ipsum et per pulmones*].” Thus in retrospect, at least, Harvey was quite conscious of the antithesis between his own “transit from the veins to the arteries” and that of Galen, and it seems quite possible that he already had this contrast in mind when he chose the language of chapters five, six, and seven in the first place. In the absence of other evidence, therefore, this language cannot be regarded as a decisive indication that these chapters were written with general centripetal venous flow in mind.

But by the same token, it might be possible to explain the apparently anti-circulatory statements on grounds other than actual ignorance of the circulation, e.g., that they represent only minor lapses into traditional parlance. Thus it would be pointless to reach a definite conclusion from these statements alone, though it at least seems fair to make the following summary of our findings. On the one hand, there are no statements in the early parts of *De motu cordis* which clearly indicate an awareness of general centripetal venous flow, except perhaps for the one in chapter four which, however, shows distinct signs of being a later interpolation in the text. On the other hand, there are a number of statements, made in various contexts, which seem to take for granted the traditional functions of the liver and veins, including the idea of centrifugal venous flow. Thus Harvey’s statements in this area are at least consistent with his being ignorant of the circulation, if not by themselves conclusively demonstrative of this ignorance.

The reversal of the direction of venous flow was perhaps the most clear-cut change in Harvey’s views brought about by the circulation, but the discovery also transformed his earlier ideas about the heart and blood vessels in many other ways as well. Some of these changes can be conveniently illustrated by a set of Harveian anatomical notes that has been preserved in the archives of the Royal Society. These notes consist of a numbered list of thirty-four anatomical and physiological

⁹⁴ *Ibid.*, pp. 52-53, with reference to Galen, *Nat. facs.*, bk. 3, ch. 15, *Opera* (1597), vol. I, fol. 307v; *De usu puls.*, ch. 5, fol. 228r; *An sanguis*, ch. 4, fol. 61r; *De usu part.*, bk. 6, ch. 17, fol. 155r. That Harvey already had these Galenic passages in mind in writing the earlier parts of the treatise is clear from his reference to them in the Proem, *Opera*, p. 11. He discussed these matters again much later, in his letter to Paul Marquard Slegel, *Opera*, pp. 616-617.

observations, which were perhaps intended merely as topics for fuller discussion on some public occasion. The items relating to the movement of the heart and blood are fairly brief, but present in outline most of Harvey's major conclusions in this area:⁹⁵

1. All the blood in the body passeth twice within one hour through the heart, and through the lungs: through the heart to receive vivacity, and new spirits; through the lungs to receive a temperament of heat.
2. The panting of the heart is but the pumping about of the blood, in the expansion receiving, and in the contraction sending it out; and it receives so much at every expansion, that considering the great proportion, and the many beatings of the heart in half an hour, it must of necessity come round about.
3. All the blood comes to the heart by the veins, and is sent from it to the arteries; for there are many little valvulae in every vein, which open to the heart, but none from it, which is a demonstration of the sense of this position.
4. The passing of the blood through the artery upon the contraction of the heart is the cause of the pulse, together with the spirits, that come with it.
6. Every artery runs at last into a vein, and so sends back the blood into the heart.
7. The reason we find little or no blood in the arteries after men's death, is because they have no valvulae to retain it, and so it slides through in the veins.
16. All arteries are stronger than veins, and every artery hath its greatest strength nigh the heart, because there it suffers the force and impulsion of the heart, in the emission of blood, in a great remission from the heart. An artery cannot be distinguished from a vein, but by the valvulae.
17. The heart, that hangs in its lunula almost just in the midst of the body, hath two vessels. One receives blood from the veins, and sends it to the lungs; the other receives it from the lungs, and sends it to the arteries.
22. Cut a vein, and the blood will run out; cut an artery, and it will spurt out; which is another demonstration that it flows from the impulsion of the heart.

These statements clearly contain elements from the earlier study of the heartbeat and pulse as well as from the later work on the circulation, but now the two themes are inextricably intermingled with each other. Harvey does not, as in *De motu cordis*, begin by discussing the movement of the heart and arteries, and only later introduce the quantitative argument and consequent notion of circulation. Instead, he boldly begins with the quantitative argument, and then goes on to treat the movement of the heart and the circulation more or less concurrently. He now views the heartbeat as constantly driving the blood

⁹⁵ These notes were first printed in Birch, *History of the Royal Society* (1757), vol. IV, pp. 535-537, and have been reprinted by Keynes as an appendix to *The Life of William Harvey*, pp. 445-447, from which I quote here.

around in a circle, rather than simply as transmitting blood from the vena cava to the arteries. Accordingly, he is now as much concerned with the passage of blood from the arteries into the veins, and from the veins back to the heart, as with its movement from the heart to the arteries. Thus he ascribes the pulse not simply to the impulsion of blood into the arteries, but to "the passing of blood *through*" them, and his interest in the heart and arteries is now matched by an equal attention to the venous system. In short, the whole presentation is replete with indications that Harvey now regards the movement of the heart and arteries as an integral part of the broader process of circulation.

This intermingling of the two themes is also apparent in the second half of *De motu cordis*, especially in chapters eight through twelve, where we actually find a whole second disquisition on the heartbeat and pulse, viewed now in the light of the quantitative argument and the circulation. And once he had come to understand these matters from this new perspective, it seems to me that it would have been impossible for Harvey to return to his old frame of mind and write an account of the heartbeat and pulse which did not betray his broader knowledge, even if he avoided direct references to it.

When we turn from these discussions back to the lecture notes of 1616, we find quite an interesting contrast. Not only does Harvey still accept the outward flow of venous blood, he also demonstrates remarkably little interest in the venous system, except as a reservoir of blood for the heart and arteries.⁹⁶ Moreover, in contrast to his later awareness that the movements of the heart and arteries form part of a larger circulatory process, Harvey in 1616 treats them as a self-contained sequence which begins with auricular systole and ends with arterial diastole.⁹⁷ Virtually no attention is given to the events which ought logically to precede and follow this sequence, namely auricular diastole and arterial systole. Thus Harvey seems quite oblivious to the questions of why the blood constantly wells up from the vena cava to refill the right auricle, and of how the arteries rid themselves during systole of the blood with which they are engorged during diastole—questions which will later be of great interest to him both as a prelude to and a consequence of his discovery of the circulation.⁹⁸ And more

⁹⁶ See esp. Harvey, *Preflectiones*, p. 254. Harvey nowhere discusses the functions of the veins in any detail in the lectures.

⁹⁷ *Ibid.*, pp. 264-272.

⁹⁸ See esp. *ibid.*, p. 258, where Harvey simply takes it for granted that the auricles are filled

generally, we find no evidence of the interest in quantity that pervades his later discussions.

An examination of the earlier portions of *De motu cordis* seems to show little change in perspective between them and the lecture notes of 1616. In these parts of the treatise Harvey not only appears to take for granted the centrifugal flow of venous blood, but is still generally indifferent to the venous system. He denies that the heart attracts blood from the veins through active dilatation (p. 25), maintaining instead that the relaxed ventricles are passively refilled by the contracting auricles (p. 29). But he offers no explanation of why the venous blood moves toward the heart or how the auricles become refilled following their contraction, except in the brief parenthetical statement in chapter four, which I have tried to show was a later interpolation.⁹⁹ Indeed, the very occurrence of this statement underscores Harvey's total silence about these matters in the rest of his rather lengthy discussion of the auricles, in which he focuses exclusively on auricular systole as the event which initiates the cardiac cycle.¹⁰⁰ He simply takes it for granted that the auricles are filled with blood at the start of contraction, which is the point at which his interest begins.¹⁰¹

Harvey's treatment of the arterial pulse likewise seems to be unaffected by an awareness of the circulation. In originally deducing the latter idea, he came to see that the constant transmission of blood into the arteries must be balanced by an equivalent flow of blood out of them into the veins, or else the arteries would soon be filled to capacity (p. 48). Yet in treating the arteries in chapter three, he seems still to be quite unaware of the need to allow for a continuous escape of blood from them. He concentrates solely on showing that arterial diastole is caused by the impulsion of blood by the heart, without so much as mentioning arterial systole or the fate of the blood after it enters the arteries.

with blood. Reference to the refilling of the right auricle and the emptying of the arteries is made in Harvey's first description of the circulation in chapter eight of *De motu cordis* (*Opera*, p. 48), as well as in his summary in chapter 14 (p. 69). Harvey would eventually focus even more attention on auricular diastole and arterial systole. See *Exercitatio altera ad J. Riolanum* in *Opera*, pp. 113, 132-133, 137; and *De generatione*, ex. 51, *Opera*, p. 391.

⁹⁹ See above, pp. 33-35.

¹⁰⁰ In addition to chapter 4, Harvey discusses the auricles at some length in chapter 15, *Opera*, pp. 81-84.

¹⁰¹ See esp. the beginning of ch. 5, p. 33: "Primum sese contrahit auricula, et in illa contractione sanguinem contentum (quo abundat, tanquam venarum caput, et sanguinis promptuarium et cisterna) in ventriculum cordis conjicit, . . ."

An interesting sidelight on Harvey's early inattention to the flow of blood out of the arteries is provided by the contrasting ways in which he discusses the contents of the pulmonary veins, left ventricle, and arteries as observed in cadavers. In the "silent" parts of *De motu cordis* he stresses several times that these organs are always filled with blood, not only in live animals, but also in dead ones. Thus in the Proem he reports that he has very often found the arteries filled with blood in dead bodies (p. 11), that "in dissections both [ventricles] are stuffed with the same blood, similarly blackening and congealing [*nigricante . . . grumescente*]" (p. 14), and that "we always see the pulmonary vein filled with thick [*crasso*] blood" (p. 16). Similarly, in chapter five we are told that anatomists "always find in dissections that the pulmonary vein and left ventricle of the heart are filled with blood, and that thick, congealing, and black [*crasso, grumescente, atro*]" (p. 36). Finally, in chapter seventeen Harvey once again insists that in dissection we find the pulmonary vein and left ventricle filled with a large amount of blood, "blackening and congealing [*nigricantis et grumescantis*]" (p. 87).

Harvey was, of course, correct in maintaining that the left heart is a sanguineous organ, but he rather overstated the degree to which this can be demonstrated in cadavers, where the pulmonary veins, left ventricle, and arteries are often largely devoid of blood. In chapter nine, however, he gave quite a different report of what is actually observed in dead bodies:¹⁰²

From my supposition you will see plainly why, in dissections, so much blood is found in the veins, but *little in the arteries*; why much in the right ventricle, *little in the left one*. It was, perhaps, this difference which gave the ancients occasion for doubt and led them to think that, during the life of the animal, spirits alone were contained in those cavities. The real reason is, perhaps, that blood can pass from the veins into the arteries in no other way than through the heart itself and the lungs. But after death has occurred, and the lungs have ceased moving, the blood is prevented from permeating from the small branches of the pulmonary arteries into the pulmonary vein, and thence into the left ventricle of the heart. . . . Since, however, the heart does not cease to move when the lungs do, but continues thereafter to beat and to survive, it happens that the left ventricle and arteries emit blood into the veins at the periphery of the body, but do not receive blood through the lungs, and thus are *virtually emptied*. But even this gives not a little support for our contention, since no other reason for this fact can be adduced, save the one which I have stated as deriving from my supposition [my italics].

¹⁰² Harvey, *Opera*, pp. 53-54; tr. adapted from Franklin, pp. 65-66.

Thus Harvey now points to the general *emptiness* of the left ventricle and arteries in cadavers as indirectly confirming the circulation, whereas he had previously insisted on their usual *fullness* with blood, even after death. In the earlier discussion he was apparently at a loss to explain how blood might escape from the left ventricle and arteries in an uninjured body, and therefore he simply denied that this occurs. But the discovery of the circulation revealed that there is a constant exit of blood from the arteries as well as a constant entrance, so that at last it became clear how the pulmonary veins, left ventricle, and arteries might be drained, if the inflow ceased while the outflow continued.

As is clear in the passage just cited, the pulmonary circuit was another phenomenon that was illuminated considerably by the discovery of the general circulation. Above all, it now became clear that this was not just an isolated process, but a particular instance of a universal one, taking place throughout the bodies of all higher animals. Indeed, Harvey emphasized the analogy of the pulmonary circulation in his very first description of the general circulation in chapter eight (p. 48).

Yet when we turn to Harvey's treatment of the pulmonary circuit in chapters six and seven, we find little evidence that he was as yet conscious of this analogy. As Donald Fleming has pointed out, there is almost no similarity between this discussion and the subsequent presentation of the general circulation.¹⁰³ At the very end of chapter seven Harvey does cite an argument in support of the pulmonary circuit that had been used frequently by his predecessors, namely that the lungs receive more blood through the pulmonary artery than they could possibly use for their own nutrition.¹⁰⁴ But he does not place much reliance on such quantitative arguments, though they will later form his main defense of the general circulation. Nor does he attempt to establish the pulmonary circuit by the kinds of direct experimental means such as the use of ligatures that he will employ in the demonstration of the systemic circulation—in fact, it was left to his younger contemporary Walaeus to extend the use of ligatures to the pulmonary vessels.¹⁰⁵

¹⁰³ Donald Fleming, "William Harvey and the pulmonary circulation," *Isis*, 1955, 46: 319-327.

¹⁰⁴ Harvey, *Opera*, p. 47; see also pp. 15, 16, 43, 87. On p. 15, Harvey attributes this argument to Colombo, with apparent reference to *De re anatomica* (Venice, 1559), p. 178. See also, e.g., Giulio Cesare Aranzi, *Anatomicae observationes*, published with *De humano foetu*, 3rd. ed. (Venice, 1587), p. 93, which should be compared with Harvey, *Praelectiones*, p. 260.

¹⁰⁵ Johannes Walaeus, *Epistolae duae de motu chyli et sanguinis*, in Thomas Bartholin, *Anatome* (Leyden, 1677), p. 766.

Instead of these methods, Harvey relies primarily in his defense of the pulmonary circuit on comparative and embryological arguments on the one hand, and the citation and analysis of Galenic passages on the other. These are by no means weak or ineffective approaches,¹⁰⁶ but one still cannot but wonder why Harvey should have used only such indirect means if he already knew of the general circulation and its proofs. Indeed, one could argue that the fundamental thrust of his approach is downright anti-circulatory. His main strategy is to show that the pulmonary circuit as a means of transmitting blood from the vena cava to the aorta is rather exceptional, being found in only a minority of animals, and even then not at all stages of their lives. Thus he completely ignores the occurrence of analogous circulatory processes through the gills and lungs of fish, amphibia, and reptiles, an oversight that makes it seem unlikely that he was already sensitive to the generality of such processes when he prepared this defense.¹⁰⁷

Thus far we have been concerned with evidence relating to knowledge of the circulation itself, but virtually inseparable from this idea in Harvey's mind was the quantitative argument which had led to the discovery in the first place, and which he later continued to regard as its principal proof. Thus if he had already made the discovery before writing the earlier parts of *De motu cordis*, we should expect to find in them an interest in the quantity of blood transmitted by the heart, but the evidence of such concerns is actually rather meager.

Perhaps the closest Harvey comes to anticipating the quantitative argument is in the Proem (p. 11):

That blood is contained in the arteries, and that they convey blood alone, is clear in the experiment of Galen, in arteriotomy, and in wounds. For from one cut artery, as Galen also affirms in many places, in the space of one half-hour the whole mass

¹⁰⁶ Michael. T. Ghiselin, "William Harvey's methodology in *De motu cordis*, from the standpoint of comparative anatomy," *Bull. Hist. Med.*, 1966, 40: 314-327, esp. 320-323; Jerome J. Bylebyl and Walter Pagel, "The chequered career of Galen's doctrine on the pulmonary veins," *Medical History*, 1971, 15: 227-228.

¹⁰⁷ An analogy between the pulmonary and general circulations might seem to be implied at the end of chapter 17 (p. 87), where Harvey asserts that the so-called artery-like vein is in all respects a true artery, while the vein-like artery is in all respects a true vein. However, the whole discussion beginning on p. 85 is based on the assumption that presence or absence of pulse, and possession of thicker or thinner tunics, are the main criteria for designating vessels as either arteries or veins, and it is avowedly by these criteria that Harvey reverses the traditional designation of the pulmonary vessels. Only if we assume that Harvey regarded direction of flow as a third criterion does this passage imply an analogy between pulmonary and systemic circulations, but there is nothing in chapter 17 to indicate that he had such a third criterion in mind.

of blood will be exhausted from the entire body, in a great and impetuous profusion.

This would appear to foreshadow chapter nine, where Harvey cites the same observation in support of the quantitative argument (p. 52):

[The amount of blood transmitted to the arteries] is also clear to sense, for those observing the dissection of live animals; not only if a large artery is opened, but (as Galen confirms for man himself) if even the smallest artery has been cut, in the space of almost one-half hour the whole mass of blood will be exhausted from the entire body, from the veins as well as from the arteries.

But as Harvey makes clear in both passages, the rapid evacuation of all the blood through cut arteries was very well known to Galen, who frequently cited this phenomenon to show that the arteries normally contain blood, and that they have connections with the veins, since the venous blood is also drained through the open arteries.¹⁰⁸ Galen and his successors clearly assumed, however, that the rate of escape of blood through such unnatural openings was grossly pathological. Thus one of the crucial developments in Harvey's thought was precisely the realization that the well-known rush of blood from a cut artery actually corresponds in some measure to the normal rate of flow, so that even in the uninjured body all of the venous blood would tend to be drained into the arteries. He could then use the old observation for the entirely new purpose of supporting the quantitative argument and hence the circulation, but there is nothing to indicate that he already had this additional use in mind in writing the Proem, where he cited the observation simply to show that by Galen's own admission the arteries are filled with blood.

Another possible anticipation of the quantitative argument occurs in chapter seven, where Harvey ends his treatment of the pulmonary circuit by emphasizing that blood passes continually ("*continue et continenter*") through the heart and lungs to the arteries (p. 46). This would seem to help lay the grounds for the argument in chapters eight and nine that the heart continually ("*continue et continenter*," p. 50) transmits more blood than can be supplied by the veins or contained in the arteries, so that the blood must circulate.

Once again, however, there are grounds for distinguishing between what Harvey may have had in mind in writing chapter seven, and a new significance which he may later have seen in his earlier conclusions. For

¹⁰⁸ Galenic references are given in note 94, above.

in the lecture notes we already find language applied to the pulmonary circuit that is quite similar to that in chapter seven: "Through the liver passes all incoming aliment, through the lungs passes incessantly all aliment and the whole mass of blood [*per pulmones omne alimentum et tota massa sanguinis incessanter*]." ¹⁰⁹ In fact, this statement summarizes in a nutshell the main themes of chapter seven, which begins by discussing the analogy between the passage of nutriment through the liver and that of blood through the lungs, and ends by stressing the continuousness of the latter. Thus Harvey need not have had the quantitative argument in mind in writing chapter seven, any more than he did in the lecture notes. He might later adapt his earlier language for use in the quantitative argument, but to do so he will have to add to the continuousness of the transit the element of extreme copiousness, which is largely absent from both the lecture notes and chapter seven.

Apart from these instances, there is little in the early portions of *De motu cordis* to indicate that Harvey already had the keen awareness of the high rate of cardiac transmission that is so apparent in the later parts. In his discussion of the heartbeat he assumes that the heart expels some blood at each beat, but he makes no effort to determine its approximate amount. He refers repeatedly to the escape of blood from cut arteries and punctured auricles and ventricles, but in all cases except the one discussed above he notes only the impetus of the escaping blood, not its rate or quantity. ¹¹⁰ And while his comparison of the arterial pulse to the inflation of a glove would seem to imply the impulsion of an appreciable amount of blood at each beat, another analogy which he offers, namely the transmission of an impulse through a plenum such as a piece of wood, requires no such assumption (pp. 26-7). Indeed, in chapter three he gives an explanation of an aneurysm in which he seems to assume that the total amount of blood flowing into an arm in the course of a day is relatively small. ¹¹¹ In chapter eleven, by contrast, he notes that the vessels of an arm become completely engorged with blood in the interval of only ten or twelve pulsations (p. 58). On the whole, then, when Harvey wrote his early treatise on the movement of the heart he seems to have been no more

¹⁰⁹ Harvey, *Prelectiones*, p. 296.

¹¹⁰ Harvey, *Opera*, pp. 10, 13, 24, 26, 29, 37.

¹¹¹ *Ibid*, p. 27. Harvey states that the greater part of the blood flowing into the arm is "diverted and intercepted" by the aneurysm, and that this diversion of blood accounts for the daily growth of the swelling.

mindful of the quantity of blood transmitted than he was of the circulation itself.

Thus the early portions of *De motu cordis* seem quite unaffected by the concept of circulation, even in a variety of areas where Harvey's thinking is known to have been significantly influenced by the discovery. Individually, these instances might be explained by assuming either that Harvey deliberately suppressed allusions to the circulation, or that he simply had not yet recognized all of its implications, but collectively they seem to me to add up to a silence that is far too profound to explain on these grounds alone. As Harvey himself remarked with some exuberance in chapter sixteen, the circulation was almost limitless in its potential for shedding new light on physiological and medical problems.¹¹²

When I finally reckon up the number of questions that can be settled, doubts resolved, and obscure places made clear, given this illuminating truth, in every part of medicine (physiology, pathology, semeiotics, therapeutics), I find a field of such vast extent that, if I explored it fully in all directions, not only would this treatise of mine turn, contrary to my plan, into a full-sized book, but the rest of my life would perhaps not suffice for my writing of it.

The illuminating powers of the circulatory hypothesis are abundantly apparent throughout chapters eight through sixteen, where the entire discussion is thoroughly saturated with the new idea. Thus when we turn from these chapters to the other parts of the treatise and find them virtually unaffected by the discovery and its implications, it becomes difficult to believe that they were written by a man who already viewed the functions of the heart and blood vessels from this new perspective.

But while the author of the Proem, chapters one through seven, and seventeen may have been oblivious to the circulation, he was totally preoccupied with another set of ideas which is summarized at the beginning of chapter five (p. 33):

First the auricle contracts itself, and in that contraction it propels its contained blood . . . into the ventricle of the heart; when the ventricle has been filled, the heart raises itself up, steadily tightens all its sinews, contracts its ventricles, and makes a beat; by this beat, the blood sent in by the auricle is continually protruded into the arteries.

The movements of the heart and arteries—these are the central themes

¹¹² Harvey, *Opera*, p. 75; tr. Franklin, p. 96.

of the original portions of *De motu cordis*. They were the subject of investigation and controversy since antiquity, and the problem that first attracted Harvey to the study of the heart and blood vessels in live animals. And, as I have tried to show, they were the only subject that Harvey intended to deal with when he first wrote a treatise for publication, probably because at this time he had not yet gone beyond these early concerns to the discovery of the circulation.

EDWARD BLISS FOOTE:
PIONEER AMERICAN ADVOCATE
OF BIRTH CONTROL

VINCENT J. CIRILLO

A century ago American society was fundamentally Victorian in character with the tragic consequence that open discussion of sexual matters was taboo. Such propriety, scarcely limited to the layman, pervaded the most prominent medical circles well into the turn of the century. As late as 1890, for example, William Goodell (1829-94), the celebrated Professor of Clinical Gynecology at the University of Pennsylvania, actually apologized in his textbook on gynecology for discussing so delicate a subject as *coitus interruptus*. "It is . . . so hard a task to discuss such subjects in acceptable language, that I confess to some squeamishness, and would much rather refer you to suitable textbooks, *were there any* [italics mine]." But none were available, "although our land is flooded with a prurient literature treating of . . . conjugal relations."¹

A decade later Denslow Lewis (1856-1913), a Chicago gynecologist, read a paper entitled "The Gynecological Consideration of the Sexual Act" before the American Medical Association in Columbus, Ohio. Although it was common procedure to publish all papers read at these annual meetings, George H. Simmons, editor of the *Journal of the American Medical Association*, refused to print "this class of literature,"² Undaunted, Lewis published the paper privately³ and distributed copies to his fellow practitioners at the following meeting in Atlantic City in 1900. Lewis' bold action met with little success, because Howard A. Kelly, Professor of Gynecology at the Johns Hopkins University and a recognized leader of his discipline in America,⁴ artlessly supported Simmons and derided Lewis' work, stating that this deliberation was "attended with more or less filth and

¹ W. Goodell, *Lessons in Gynecology* (Philadelphia, 1890), pp. 562-563.

² M. H. Hollender, "The medical profession and sex in 1900," *Amer. J. Obstet. & Gynec.*, 1970, 108: 139-148.

³ Denslow Lewis, *The Gynecological Consideration of the Sexual Act*. Appendix by Marc H. Hollender with an account of Denslow Lewis (Weston, Mass.: M & S Press, 1970).

⁴ F. H. Garrison, *An Introduction to the History of Medicine* (Philadelphia: Saunders, 1929), p. 604.

we besmirch ourselves by discussing it in public. . . . I do not believe mutual pleasure in the sexual act has any particular bearing on the happiness of life."⁵

Within this parochial setting a remarkable New York physician named Edward Foote labored a lifetime, against intolerant and unreasoning opposition, to enlighten society on matters of birth control.

Edward Bliss Foote, the second of three children of Herschel Foote (1793-1870) and Pamela Bliss (née Townsend) Foote (1805-99), was born at Collamers,⁶ a suburb of Cleveland, Ohio, on 20 February 1829. His forebear, Nathaniel Foote (1593-1644), had emigrated from England two centuries earlier to become one of the original settlers of Wethersfield, Connecticut.⁷

Edward Foote's formal education was limited to a brief attendance at Shaw Academy, later renamed the East Cleveland High School. Deeply influenced by a biography of Benjamin Franklin, he left school at the age of fifteen to become apprenticed to a printer at the *Cleveland Herald*.⁸ Three years later, after acquiring a sound knowledge of the printing business and a proficiency at journalism, he left Cleveland for a position as compositor with the *New Haven Journal*. Following a short tenure in New Haven, he joined the *New Britain Journal* which, under his direction as editor, became the largest selling weekly in the state. Next we find Foote as an associate editor of the *Brooklyn Morning Journal*, the first morning newspaper published on Long Island. Sometime during his engagement with this tabloid he developed his interest in medicine. He studied with a local physician and, after completing his readings, he abandoned journalism to enter into the practice of medicine under the tutelage of his preceptor.⁹

Although Foote's early education had been meager, his medical education was first-rate. In 1860 he was graduated from Penn Medical University in Philadelphia, having submitted for his degree a thesis entitled *Electricity in Relation to the Human Organism*.¹⁰

Penn Medical University was founded 14 January 1854 by Dr.

⁵ Lewis (note 3 above).

⁶ A. W. Foote, *Foote Family Genealogy and History*, 2 vols. (Rutland, Vt.: Marble City Press, Tuttle Co., 1907-32), Vol. 1, pp. 257, 388.

⁷ *National Cyclopaedia of American Biography* (New York, 1893), vol. 3, p. 68.

⁸ *Biographical History of Westchester County* (Chicago, 1899), vol. 1, p. 112.

⁹ *Ibid.*

¹⁰ H. J. Abrahams, *Extinct Medical Schools of Nineteenth-Century Philadelphia* (Philadelphia: University of Pennsylvania Press, 1966), pp. 176-231.



FIGURE 1.

Portrait of Edward Bliss Foote which formed the frontispiece to his *Medical Common Sense* (1864).

Joseph S. Longshore.¹¹ Although it lacked elaborate accommodations its curriculum was innovative, antedating by many years the liberation of American medical schools from the routine repetitive courses. The school was notable from another aspect. Women were admitted on an equal basis with men, and by 1864 seventy-four women had received their medical degrees. Following the Civil War the faculty of Penn Medical University was dispersed. In addition, the prime mover of the school, Dr. Longshore, had fallen gravely ill. As a consequence, the school became part of the Philadelphia University of Medicine & Surgery, which closed its doors in 1880 as a result of a bogus diploma scandal.

Foote opened his practice at Saratoga Springs, New York. Shortly thereafter he removed himself to New York City where he remained for the rest of his professional life.

On 6 September 1853 Foote married Catherine Goodenough Bond (d. 1900), a school teacher from Watertown, Massachusetts. Catherine bore him three sons: Edward Bond (b. 15 August 1854), Hubert T. (b. 18 January 1859) and Alfred Herschel (b. 16 May 1871).¹² Alfred died at the age of twelve from appendicitis; but Edward and Hubert followed their father into the medical profession. Edward Bond Foote was exposed to an excellent education, attending the Charlier Institute in New York and graduating in 1876 from The Columbia College of Physicians & Surgeons, receiving the Séguin prize for his report on the nervous system. Hubert T. Foote was graduated from The Eclectic Medical College of the City of New York, and practiced medicine in New Rochelle.

Largely through the efforts of Anthony Comstock (1844-1915), secretary of the New York Society for the Suppression of Vice, Congress passed a law in March 1873 closing the mails to every type of "obscene and indecent matter." In June 1876 Foote was indicted under this new federal statute, now termed the Comstock law, for distributing contraceptive information through the mails in his pamphlet *Words in Pearl*.¹³ In July the case was heard before Judge Benedict at the opening session of the criminal branch of the United States Circuit Court. Foote was found guilty on 11 July 1876 and fined \$3,500. A possible ten-year prison sentence was suspended, because the judge "understood many patients might suffer if a sentence of imprisonment

¹¹ *Ibid.*

¹² Foote (note 6 above).

¹³ *New York Times*, 28 June 1876, p. 3.

was rendered."¹⁴ Foote's medical practice was little affected by the trial publicity, although he was publicly denounced by some of his more orthodox colleagues.

Upon retirement Foote resided at Larchmont Manor, his home in Larchmont, New York, where he devoted his remaining years to writing.

Although Foote wrote extensively, publishing a multi-volume work, *Science in Story*, for young people in 1874 and editing a periodical called Dr. Foote's *Health Monthly*, it is this author's intention that we concern ourselves only with his three major works: *Medical Common Sense*, *Plain Home Talk* and *Home Cyclopaedia*. In these three popular books one can trace the development of Foote's efforts to educate society to the need for contraception.

Foote's entrance into this controversial arena occurred in 1858 with the publication of the first edition of his *Medical Common Sense*. This small volume for the layman, "written in language strictly mundane," contains a brief section labelled "The Prevention of Conception."¹⁵ Here Foote lists the hazards associated with the common methods employed in his day to prevent "a too rapid increase of offspring" (e.g., douching with caustics, abortion and *coitus interruptus*), but he fails to offer any reliable substitutes. Equally important, he remains silent concerning his philosophy on this subject.

Subsequently, a revised edition appeared in 1864 which was enlarged by more than a hundred pages. It is in this issue that Foote sloughs off his previous timidity and presents a complete approach to contraception, giving his philosophy, an exposition of the commonly employed contraceptive methods and details on the reliable devices he recommends.¹⁶

Clearly, his reasoning is neo-Malthusian and not medical when he states that "excessive child-bearing may be truthfully said to be the bane of general society. It is not only destructive of the vital powers of the female herself, but entails innumerable ills upon subsequent posterity, in bringing children into the world, like Shakespeare's Richard 'scarce half made up' . . ."¹⁷

Foote continues with a fairly comprehensive examination (Part II,

¹⁴ *New York Times*, 12 July 1876, p. 3.

¹⁵ E. B. Foote, *Medical Common Sense* (Boston, 1858), pp. 247-250.

¹⁶ V. J. Cirillo, "Edward Foote's *Medical Common Sense*: An early American comment on birth control," *J. Hist. Med. & Allied Sci.*, 1970, 25: 341-345.

¹⁷ E. B. Foote, *Medical Common Sense* (New York, 1864), pp. 335-339, 378-380.

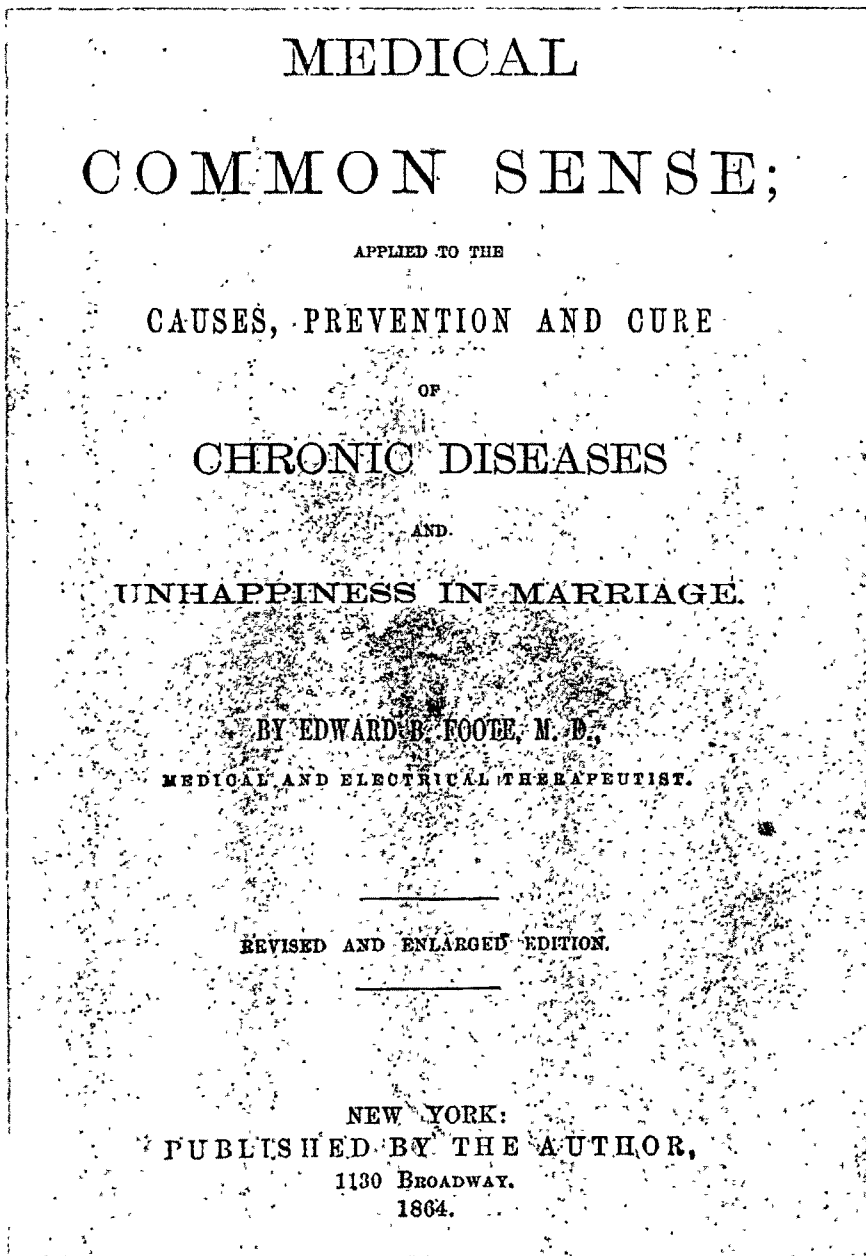


FIGURE 2.

Title page of Edward Foote's *Medical Common Sense* (1864).

Ch. 8) of the traditional, folklore-based contraceptives employed in his day out of ignorance "because there is an actual demand for some reliable prevention." Strangely, he avoids mention of infanticide as a means of controlling population. Surely, Foote was aware that the incidence of this horrid practice, so prevalent among the peoples of all nations for centuries,¹⁸ would be reduced by the availability of effective contraceptives. He does deal, however, with abortion. Abortion had become a statutory crime in the United States in 1830, but abortions were still clandestinely performed in great numbers.¹⁹ "I am confident that much of the horrible practice of procuring abortion, now so prevalent among married people, is caused by a want of simple and reliable means of prevention . . ."²⁰

After presenting his reasons for controlling population and discarding the methods available as either harmful or inadequate, Foote delves into some detail regarding those contraceptives he viewed as dependable: the condom, the glans condom and the cervical diaphragm. He handles these devices with a quite modern tone. Unfortunately, he lays claim for the invention of the cervical diaphragm which was not substantiated.²¹

Medical Common Sense was well received in America and abroad, and was destined to go through many editions and revisions. More than 250,000 copies had been sold by the turn of the century.²²

Foote continued his crusade for the acceptance of contraception with the publication of his second book, *Plain Home Talk*.²³ Foote omitted the contraceptives he described so ably in *Medical Common Sense* several years earlier, because he had "already in pamphlet form a work treating fully upon this subject . . ." (*Words in Pearl?*). Instead, the section on contraception, Part IV, Chapter 7, deals exclusively with John Humphrey Noyes (1811-86), founder of the Oneida Community and propounder of the theory of "male continence." In essence, male continence consisted of normal intromission and movements without ejaculation (*coitus reservatus*). Noyes claimed that when detumescence

¹⁸ S. X. Radbill, "A history of child abuse and infanticide," in R. E. Helfer and C. H. Kempe (eds.), *The Battered Child* (Chicago, London: University of Chicago Press, 1968), pp. 3-17, and W. L. Langer, "Checks on population growth: 1750-1850," *Sci Amer.*, 1972, 226:92-99.

¹⁹ C. Tietze and S. Lewit, "Abortion," *Sci. Amer.*, 1969, 220. 21-27.

²⁰ Foote (note 17 above).

²¹ Cirillo (note 16 above).

²² N. E. Himes, *Medical History of Contraception* (New York: Gamut Press, 1963), p. 278.

²³ E. B. Foote, *Plain Home Talk* (New York, 1871), pp. 876-880.

took place intravaginally, in the absence of a male orgasm, there were no harmful effects.

Foote writes:

I have been acquainted with the discovery of the Rev. Mr. Noyes for several years . . . and advised a trial of it in a very great number of cases. . . . The reports in all cases heard from were adverse to the physical effects of practicing the "male continence" rule.

Although Noyes professed repeatedly that male continence worked well in his polygamous colony, Foote commented that such would not be the case in "the monogamic family, and for this reason it is the duty of the physician to advise everybody who wants counsel on this subject, and prescribe means which will effectively prevent conception. . . ."

Foote's last major piece of writing appeared four years prior to his death. In Part IV, Chapter 7 of his *Home Cyclopaedia*²⁴ Foote laments the rigorous new laws enacted by Congress (e.g., the Comstock law) restricting the dissemination of contraceptive information. He pleads with his readers to act within the legal system for the repeal of these shortsighted statutes.

Foote continues in length on the social values to be derived from the use of contraceptics (a term coined by Edward Bond Foote)²⁵ in a section entitled "Contraceptics; Their Value in Promoting Human Evolution."

Foote relates that the population of his country had risen from three million in 1790 to eighty million in 1900. "The United States . . . at the present rate of increase will need some undiscovered continent . . . upon which to dump our surplus!" He goes on to state:

With contraceptics in the hands of the mothers of the race, the family physician could intelligently and effectually advise a woman when she might safely parent a child without entailing upon it a life of physical suffering . . . he could . . . provide means whereby the provident wife could select the most auspicious periods to add her quota to the worlds population. *What the human family needs, and must have, to promote moral, physical and mental evolution, is some means of producing fewer and better children* [italics mine].

On Friday morning, 5 October 1906, Edward Bliss Foote, aged 77,

²⁴ E. B. Foote, *Home Cyclopaedia* (New York, 1902), pp. 1143-1148.

²⁵ E. B. Foote, *The Radical Remedy in Social Sciences, or Borning Better Babies through Regulating Reproduction by Controlling Conception* (New York, 1886), p. 52.

died at his home on Prospect Avenue in Larchmont, New York, following a protracted period of invalidism.²⁶

Edward Bond placed a copy of the *Home Cyclopedia* into his father's hands before the burial at the Cypress Hills Cemetery in Long Island, having written the following on the first fly-leaf:

As his work was his life companion, his solace, his Bible, the mirror of his soul, so must a copy of it go with him to mitigate the lonesomeness of the grave.²⁷

Edward Foote's long and productive life was a testimony to the ideals he had established as a young man: "I shall not hesitate to lay before my readers . . . such information as I am in possession of, for the prevention of conception."²⁸

²⁶ *New York Times*, 6 October 1906, p. 9, and *J.A.M.A.*, 1906, 47: 1319.

²⁷ T. B. Wakeman, *In Memory of Edward Bliss Foote* (New York, 1907).

²⁸ Foote (note 17 above).

TRACADIE AND PENIKESSE LEPROSARIA: A COMPARATIVE
ANALYSIS OF SOCIETAL RESPONSE TO LEPROSY IN
NEW BRUNSWICK, 1844-1880,
AND MASSACHUSETTS, 1904-1921*

PHILIP A. KALISCH

"Their breath is contagious, their leprey spreading."
(N. Ward, *Simple Cobler*, 1647.)¹

I

Few diseases have commanded the interest of the pathologist, the historian, or the lay public as much as leprosy. Medical historians often study leprosy in relation to the history of the disease rather than to the history of society; hence, their interest in G. Armauer Hansen and the bacillus he discovered in 1873, and their relative neglect of the unique social institutions created for the sufferers of that malady.² The Medi-

*Read before the forty-fifth annual meeting of the American Association for the History of Medicine, Montreal, Quebec, May 4, 1972.

¹ Nathaniel Ward, *The Simple Cobler of Aggawam in America* (London: Printed by J. D. and R. I. for Stephen Bowtell, at the signe of the Bible in Popes Head-Alley, 1647), p. 19.

² Among the most valuable works for a general introduction to the historiographical side of the disease of leprosy are the following: Philip Gabriel Hensler, *Vom abendlandischen Aussatz im Mittelalter, nebst einem Beitrage zur Kenntniss und Geschichte des Aussatzes, neue unveranderte Ausgabe* (Hamburg: n.p., 1790); D. C. Danielssen and W. Boeck, *Traité de la Spédalskbed, avec un Atlas, de 24 planches coloriées* (Paris: J. B. Ballière, 1848); Royal College of Physicians, *Report on Leprosy by the Royal College of Physicians Prepared for Her Majesty's Secretary of State for the Colonies* (London: Her Majesty's Stationery Office, 1867); August Hirsch, *Handbook of Geographical and Historical Pathology* (London: New Sydenham Society, 1885), Vol. II., pp. 1-58; G. A. Hansen and C. Looft, *Leprosy: In Its Clinical and Pathological Aspects*, Translated by N. Walker (London: Simkin and Marshall, 1895); E. Jeanselme, *La lèpre* (Paris: Gaston Doin, 1934); G. Newman, *Prize Essays on Leprosy* (London: New Sydenham Society, 1895); H. C. Leloir, *Traité pratique et théorique de las lèpre* (Paris: A. Delahaye and E. Lecrosnier, 1886). Popular but very superficial works are: Anthony Weymouth, *Through the Leper-Squint: A Study of Leprosy from Pre-Christian Times to the Present Day* (London: Selwyn & Blount, 1938) and Patrick Feeny, *The Fight Against Leprosy* (London: Elek Books Ltd., 1964). A sweeping but interesting overview is provided by Zachary Gussow and George S. Tracy in "Stigma and the leprosy phenomenon: the social history of a disease in the nineteenth

eval query concerning the number of angels who can gambol on the head of a pin had at least one attendant counterpart: How many "lepers" will a kingdom tolerate? In the case of the first query the compelling need to find an answer seems to have vanished sometime after the 15th century. Not so for the second. This paper seeks to analyze comparatively, as case studies, the societal response to leprosy at the Provincial and State levels in New Brunswick and Massachusetts at two different intervals in time by addressing itself to several questions. What forces created these medical and social enterprises called "leper colonies"? How are they best understood? How are we to account for them at a particular historical juncture, and how are they to be evaluated? And why was it that despite the intensity of interest rather little was achieved?³

Edmund Burke once wrote: "a very great part of the mischiefs that vex the world arises from words." The New Brunswick Board of Health and the Massachusetts Board of Charities might have borne this in mind when they chose to consistently employ the terms "leper," "leper home," and "leper colony." While their terminology has a degrading connotation to present victims of leprosy or Hansen's disease, one must, in the interests of historical scholarship and accuracy, employ these words in a study such as the following.⁴

and twentieth centuries," *Bull. Hist. Med.*, 1970, 44: 425-449. For the developments relative to the pathological side see, R. G. Cochran, *Leprosy in Theory and Practice* (Baltimore: Williams and Wilkins, 1964) and L. Rogers and E. Muir, *Leprosy* (London: John Wright and Sons, 1940).

³ For some interesting findings in this direction see Olaf K. Skinsnes and Robert M. Elvove, "Leprosy in society: leprosy in occidental literature," *Intern. J. Leprosy*, 1970, 38: 294-307. Skinsnes holds that the social reaction to true leprosy has been and is now so characteristic as to be almost pathognomic and that in ancient literature, as well as in the Old Testament, the existence of true leprosy can be inferred from the accompanying social reaction. The origins of leprosy are beclouded and have become the subject of much controversy. According to G. Barbézieux in his "Contribution à l'étude de l'histoire de la lèpre dans la plus haute antiquité," *Janus*, 1914, 19: 132-149, the almost universal and traditional opinion of the origin was that, starting from Egypt, its first home, the disease was spread by the Israelites, Phoenicians, Assyrians, and Persians, first throughout Asia, then throughout Europe, and then to America and Australia in the course of the various migrations of these peoples.

⁴ The leading exponent of the term Hansen's Disease, in lieu of leprosy, was the Carville, Louisiana, Federal Leprosarium patient, Stanley Stein. See his illuminating book, *Alone No Longer* (New York: Funk and Wagnalls, 1963) along with various issues of the patient magazine, *The Star*. It should be kept in mind that at the International Congress of Leprosy in Havana in 1948, and again in Madrid in 1953, it was agreed that the word leper is offensive and opprobrious. Indeed it should be avoided in all present-day situations and expressions such as leprous patient or leprosy patient should be substituted for it. The name leprosy, it was agreed, should be retained.

II

French explorer Jacques Cartier was first to visit New Brunswick when in 1534 he dropped anchor briefly in Miramichi Bay, and reveling in the summer heat of the vast harbor, named it the Bay of Chaleur. The initial settlements on the Miramichi River were made during the early 1700s by Basques, Bretons, and Normans from France and other nearby colonies. Although the cession of Acadia to Britain in 1713 brought in a few English, by 1840 the entire population of coastal Gloucester County, New Brunswick, was only 7,751, while adjacent Northumberland County, at the same time, contained 14,220 people. In both counties, the French outnumbered the English by about nine to one.⁵

According to the best sources of information, the New Brunswick leprosy episode began when, on a sultry afternoon in August 1828, the Reverend Bellefleur, a missionary priest, was summoned to administer the last rites of the Church to a woman named Ursule Landry, who was slowly rotting of a mysterious and loathsome disease from which she had been suffering since 1815. Very shortly thereafter, she died and her coffin was carried to its last resting place on the shoulders of four men from the neighborhood. One of the pall bearers, Francis Sonier, later claimed that he contracted the strange disease by carrying Ursule's coffin, the sharp edge of which cut his shoulder and effected inoculation with matter running from the corpse.⁶ Sonier was ill from the malady for a number of years in his father's house, which was a gathering place for young people from the neighborhood. Several of these adolescents subsequently became afflicted with the disease. Francis Sonier then attempted to travel to Cape Breton Island to receive treatment from a man there who had a wide reputation for being able to cure ulcers. On the way he stopped at the house of one Savoy. During his visit a member of the family, Mary Savoy, washed the clothes of the bed in which he slept, and afterward herself contracted the disease. Moreover, the sister of Ursule Landry also became infected

⁵ Note: New Brunswick was separated from Nova Scotia on August 16, 1784. It was made a province, with a nominated council acting as executive and legislature and an elected assembly. The first capital was located at St. John.

⁶ "Message of His Excellency the Lieutenant Governor recommending provision for the sufferers from a disease at present prevailing at Tracadie, in the County of Gloucester, February 28, 1844," in *Journal of the House of Assembly of New Brunswick*, 1844, p. 44. Hereafter cited as *Journal of Assembly*. Alexander Key, "Tracadie disease," in *Journal of Assembly*, 1845, pp. 164-170.

along with the wife of a Scotch resident of Newcastle named Gardiner. It was not until a number of persons who were intimate with the Soniers had contracted the strange and hideous malady during the 1830s that public attention was gradually drawn to the affliction. While no one knew what the disease was, it inspired terror.⁷

As Henry W. Baldwin, High Sheriff of the County of Gloucester, reported in early 1844:

About three years since some of the principal inhabitants of Tracadie, in this county, represented to me that a strange disease had made its appearance there some years before, that it appeared incurable, that it was then confined to one or two families, but that great apprehension existed lest it should spread its ravages and that it might be found necessary to assess the parish for the support of the sick; as the people, for the most part being very poor and the exacting of a money tax would be grievously felt by them, I therefore recommended them to relieve the afflicted to the extent of their power by voluntary contributions of such necessities as they had, to be dispensed by the overseers of the poor, upon a hope that the disease might decline and finally in a year or two disappear.⁸

Baldwin continued, pointing out that,

The hope that the distemper would decline, however, has been disappointed. In my subsequent visits to that part of my Bailiwick I have been advised that this disease was spreading and the fear of the people for the safety of their families increasing.⁹

The Provincial Grand Jury was now spurred to action. After a hearing, that body drew attention to the fact that:

. . . a loathsome and frightful disease has existed in Tracadie in this county for some years past, pronounced by eminent physicians to be Leprosy, that it principally if not altogether prevails among the poorer classes, who are unable to procure for themselves medical advice, care or attention and are left to the mercy of their neighbors in their affliction. The people, however, alarmed at the disease, generally shun the afflicted and have hitherto been in the habit of confining, in some in-

⁷ "Leprosy; Greek elephantiasis or something else, prevailing in the Province of New Brunswick, near the Bay of Chaleurs," *New York Med. J.*, May, 1844, 3: 279-281. Note: The weather station at Chatham, New Brunswick, reports that the mean daily temperature ranges from 12 degrees above zero in January to 66 degrees in July—hardly an inviting climate for a so-called tropical disease like leprosy. In addition, freezing temperatures usually occur in all months except July and August.

⁸ "A communication from Henry W. Baldwin, Esquire, High Sheriff of the County of Gloucester," in *Journal of Assembly*, 1844, p. 209.

⁹ *Ibid.*, pp. 209-210. For a somewhat different explanation of the initiation of this endemic focus of leprosy see the account by Reverend Felix-M. Lajet, *Le Lazaret de Tracadie* (Montreal: L'Action Paroissiale, 1938), pp. 60-65. This very readable account unfortunately contains neither footnotes nor bibliography.

stances, the Leper in a log enclosure constructed for the purpose and handing his food to him through an opening in the logs until he can no longer receive it when of course he dies. A practice most revolting to humanity and discreditable to the country in which it is permitted.¹⁰

On February 30, 1844, the Lieutenant Governor of New Brunswick, William Macbean George Colebrooke, laid before the House Assembly of New Brunswick a copy of a "Presentment of the Grand Jury of the County of Gloucester, respecting a Disease at Present prevailing at Tracadie" along with a letter from Dr. Alexander Key. Colebrooke recommended that "provision should be made for the due care of the sufferers, and with a view to prevent the spread of this distemper."¹¹ This message was referred to the Committee of Supply. Additional efforts were made to push legislation on the matter by James Blackhall of Caraquet, the Reverend Stanislas Lafrance, Roman Catholic Missionary at Tracadie, and the aforementioned Henry W. Baldwin, High Sheriff of the County of Gloucester.¹² On March 21, 1844, the House went into a Committee of the Whole to deal with what was regarded as an emergency over the alleged leprosy outbreak and soon resolved unanimously that "immediate steps should be taken to relieve the sufferers, and check the further spread of the Disease."¹³ They placed the sum of 500 pounds at the disposal of the Lieutenant Governor for the purpose. On April 11, 1844, His Excellency, the Lieutenant Governor, signed "An Act to prevent the spread of a Disease now existing in certain parts of the Counties of Gloucester and Northumberland."¹⁴

Subsequently a commission made up of Alexander Key, Surgeon; J. B. Toldervy, M.D.; A. H. Skene, Assistant Surgeon, Fifty-Second Light Infantry; Robert Gordon, M.D.; and Reverend Stanislas Lafrance, a local priest, was sent out by the Lieutenant Governor to investigate the nature, origin, and extent of the "frightful and loathsome disease."¹⁵ Three days later, the majority of the commission rendered the verdict that they had found the contagious "Leprosy of the Middle Ages." The commissioners discovered more than two dozen cases of leprosy, all of

¹⁰ *Journal of Assembly, 1844*, p. 84. M. de Belleville maintains that the importation of leprosy dates back to 1758 and from that time on "it was known in isolated instances." See his informative article: "The Lepers of Tracadie," translated from *Revue Canadienne*, in *Catholic World*, 1877, 25: 191-205.

¹¹ *Journal of Assembly, 1844*, p. 85.

¹² *Ibid.*, p. 188.

¹³ *Ibid.*, p. 84.

¹⁴ *Ibid.*, p. 275; p. 323.

¹⁵ A. H. Skene, "Leprous disease," *Montreal Med. Gaz.* 1844-1845, 1: 79, 112.

which were traced to a single source—the deceased woman, Ursule Landry.¹⁶

The verdict excited a great deal of alarm in the Province as the Chatham newspaper, the *Miramichi Gleaner* warned that:

The subject is one of paramount importance. The disease is rapidly approaching our more densely populated districts—and is now only twenty-four miles from Chatham. We trust, therefore, the members of the Assembly, on hearing the report of the Commissioners, will not hesitate to enlarge the grant. Whatever they decide on doing, ought speedily to be accomplished, for it may, in short time, be beyond the power of human means to check its progress.¹⁷

The alarming rumors owed much of their effect to the re-inforcing fears of local physicians. Their attitude was crucial because their reaction could crystallize and confirm popular fears. The commission report unanimously recommended the erection of a lazaretto, and the removal of all “lepers” to its confines where they would be strictly secluded, citing the precedent established in ancient and medieval times of banishing “lepers” from society. The Provincial Legislature responded by granting 1,000 pounds to enable the suggestions to be implemented.¹⁸

According to Ferdinand Gauvreau, curé of Tracadie, it was most difficult to believe that leprosy had spontaneously appeared in New Brunswick. He was convinced that “the poisonous virus was not the growth of this spot, but was brought here by some traveler.”¹⁹ One explanation was that about 1812 a ship from the East Mediterranean put into Caraquet Harbor and that Ursule fraternized with the sailors and washed their clothes thus becoming inoculated with the disease.²⁰ Another theory was that a “leper” had previously escaped from a Trinidad or Norway lazaretto and somehow scattered the germs of the disease amongst the local inhabitants.²¹

In attempting to throw some light on the mysterious origins of the

¹⁶ *Journal of Assembly*, 1844, p. 299; Alexander Boyle, “Leprosy in New Brunswick,” *London Med. Gaz.*, 1844, 34: 609-613.

¹⁷ *Miramichi Gleaner*, April 8, 1844.

¹⁸ J. B. Johnson, “On the Canada leprosy,” [London] *Med Times*, 1844-1845, 11: 97. Dr. Key reminded the New Brunswick House of Assembly that leprosy has prevailed in nearly every country in Europe from the tenth to the sixteenth century and that “the Pope issued Bulls with regard to the Ecclesiastical separation and rights of the infected.”

¹⁹ *Journal de Montreal*, November 30, 1859.

²⁰ Robert Bayard, “An essay on Greek elephantiasis as occurring in Tracadie and its vicinities,” *The Lancet*, 1849, 2: 260.

²¹ C. M. Kelley, “An account of Canadian leprosy,” *Montreal Med. J.* 1909, 38: 387.

disease, Dr. Robert Bayard in 1847 located the eighty-eight-year-old mother of Ursule Landry. The old woman testified that both her father and mother had been born in Quebec and that Ursule was the eldest daughter of her family of sixteen children. She contradicted the report that Ursule had contracted the disease from washing the clothes of the sailors who landed at Caraquet. While such sailors had appeared, she said she was positive that they were not "lepers." Besides Ursule, leprosy broke out in Isabella, her second born, and Frances, her sixteenth child. The only hint Dr. Bayard could uncover relative to the source of the disease was the fact that Ursule's grandfather had emigrated from St. Malo in Normandy about 1690 or 1700.²² This was during a period when leprosy was rapidly decreasing in Europe but it is possible that it was somehow introduced in this fashion or else derived from slave importation through the West Indies since there is no good evidence that leprosy existed on the American continent in pre-Columbian times.²³

²² "Report of Robert Bayard, Esquire, M. D. and William Wilson," *Journal of Assembly*, 1848, p. 71. Dr. Alexander Key asked each of the lepers how they had come to acquire the disease shortly after the founding of the lazaretto and recorded comments of each in his casebook: "All concur in the opinion that Joseph Benoit caught it from his wife . . . Mrs. F. Benoit [Ursule Landry]. In her friendly services to her sister (Mrs. J. Benoit) caught the disease . . . Francis Sonier was often at the Benoit's where the disease was, thinks he got the disease by matter discharged on his shoulder from the coffin of Mrs. J. Benoit . . . Mrs. Francis Robicheaux, Junior, (Edith Sonier) got it from her brother Francis Sonier . . . Cyril Austin got it from Francis Sonier, with whom he stopped the two last years of his [Sonier's] life." Key's comments continue in this fashion for each of the remaining patients. It is theoretically possible that the leprosy of New Brunswick might be linked to the outbreak among the Acadians who emigrated from Canada to the area of Bayou LaFourche in Louisiana. It is important to note, however, that the expulsion of the 6,000 Acadians, who were feared as constituting a French fifth column in Nova Scotia, occurred in 1755. Hundreds went to the French West Indies and others later formed the refuge in Spanish Louisiana. It is known that Governor Miro established a leper colony at Belize near the mouth of the Mississippi in 1785. That intercourse of leprosy victims existed between New Brunswick and Louisiana as of about 1812 is indicated by Dr. Alexander Boyle who narrates: "It occurred in a person about thirty years of age, a native of Antigua. He had labored under it for a considerable length of time, and came to St. John for the benefit of his health, where he married an interesting young lady, about two years before I saw him. His breath was extremely offensive, and his hands, face and legs were covered with blotches and tubercles of a livid, brownish color, and some of them were in a state of ulceration. He afterwards went to New Orleans, in a worse state than when he first left the West Indies; and died of this disease not long after his arrival." See "The leprosy in New Brunswick," *Boston Med. & Surg. J.* 1844, 31: 118.

²³ Albert S. Ashmead, "Introduction of Leprosy into Nova Scotia and the Province of New Brunswick," *J.A.M.A.*, 1896, 28: 208. I would argue with Ashmead that leprosy absolutely did not exist in the Americas prior to the arrival of Columbus in 1492. The best evidence indicates that the slave trade brought leprosy and spread it. Indeed at the end of the 18th century there were 1,600,000 African slaves in the Antilles alone. See M. A. Gonzales Prendes and Perez R.

The Board of Health desired a location for the lazaretto that was far enough away from the population to prevent contagion but close enough so that they could exercise their power of supervision. Indeed, the first site was selected seemingly under the assumption that the "lepers" ought to be physically and socially banished for the protection of the general public. According to the medical authorities of the day, several miles would prevent any innocent person from being affected by poisonous emanations from leprous bodies, although they would, of course, locally infect the atmosphere surrounding them.²⁴

An old quarantine station on Sheldrake island in the Miramichi River was quickly selected as the lazaretto site and with the assistance of Reverend LaFrance, nearly forty "lepers" were persuaded to embark for the island on boats.²⁵ Although the commissioners expected to put the "lepers" to work on farming, forestry, and domestic tasks, this proved impossible. The "lepers" did not get along well with each other, even refusing to eat the food that was prepared by a "leper" cook. They complained about the hard plank beds which were covered with only one blanket.²⁶ Moreover, they felt they had been deceived by the false promises of the Board of Health as to the facilities and by lack of medical treatment at Sheldrake. Only one man and his wife, hired to act as caretakers for the lazaretto, accompanied their lonely exile on the island.²⁷

"The conduct of the unfortunate person affected with Leprosy since their removal to the Lazaretto, has not been so satisfactory as the Board could wish," wrote George Kerr, Secretary-Treasurer of the New Brunswick Board of Health.²⁸ He added that there had been numerous escapes from the island by the inmates' floating away on tree trunks and that the Board had spent a large amount of money in sending search parties out to look for escaped "lepers." What is more, although every inducement had been extended to the "lepers" to encourage cleanliness and even payment offered for any work performed, "the

Ybarra, "Las Antillas: puerta de entrada de la lepra en America," *Revista de Sifilografia, Leprologia y Dermatologia*, 1952, 8 5-25.

²⁴ "Report of Henry A. Hartt on lazaretto at Sheldrake Island and leprosy disease, June 19, 1848," in *Journal of Assembly*, 1848, pp. 155-157.

²⁵ "Report of medical officer in charge of lazaretto at Sheldrake Island," February 27, 1845, in *Journal of Assembly*, 1845, p. 169; Lejat, *Le Lazaret de Tracadie*, p. 80.

²⁶ "Report from Commissioners of Lazaretto at Sheldrake Island," in *Journal of Assembly*, 1846, Appendix, p. xciii.

²⁷ Lejat, *Le Lazaret de Tracadie*, pp. 86-87.

²⁸ *Journal of Assembly*, 1845, Appendix, p. 1xxxiii.

liberality of the Board they [the lepers] do not appreciate; on the contrary, they appear anxious to throw every obstacle in the way."²⁹

The inmates, however, saw Sheldrake in a very different light as one later recalled:

The horrors of that dreadful pest-house will never be told. Even the two or three persons who prepared food and rendered such other services as they thought could be rendered with safety to themselves, knew little of the sufferings of the lepers. Physicians seldom visited the place; and when they did visit it, they too were afraid of the disease, and they saw little of what the patients suffered. The priest was almost their only visitor; and he could tell of the horrors he witnessed, but little attention was paid to his representations, as it was generally believed that nothing better could be done, and that it was absolutely necessary, for the public safety, that the diseased should be sent to the lazaretto.

The tragic account continued:

Occasionally, a leper, grown desperate, had escaped; but who would listen to him? His approach was dreaded, every door was shut in his face; everything he touched was regarded as polluted; and the whole countryside directed and assisted the officers sent to hunt him down.³⁰

To apprehend the escaped "lepers," the Board finally sent one of their own members and a constable in pursuit of the fugitives, but they recaptured only one escapee, as the others, notwithstanding the severity of the weather at the time, secreted themselves day and night in the dense forests until they were assured of the homeward return of their pursuers. Peter Savoy later testified that the Board member and the Constable came to his house and forcibly carried his son Bernard from him: that they bound him with ropes; and that when he [the father] attempted to rescue him, the officers of the lazaretto presented a pistol to his breast, and thus enforced submission. This statement was confirmed by others unconnected with his family.³¹

It is not surprising that on October 20, 1845, several of the patients conspired in setting fire to the main building of the lazaretto between four and five in the morning. Although the inmates, thanks to knowledge of the impending arson, were able to save their bedding and clothes, all the furniture and most of the supplies were destroyed.³²

²⁹ *Ibid.*, 1846, Appendix, p. xciii.

³⁰ Quoted in Lejat, *Le Lazaret de Tracadie*, p. 97.

³¹ "Report of Secretary of the Board of Health for Northumberland and Gloucester, February 25, 1845," in *Journal of Assembly*, 1845, p. 194.

³² "Report from Commissioners of Lazaretto, October 20, 1845" in *Journal of Assembly*, 1845, Appendix, p. lxxxiii.

The lazaretto now came upon financial hard times, its emerging practices and general style became suspect in the eyes of most Provincial authorities who gazed upon them, and it was not long before it became an institution swimming against the current. In a context of suspicion and hostility, the early Board of Health continued to enunciate vigorously its singular purpose of protecting the public from contagion, accordingly, and to let the widening social and political controversies take the hindmost.³³

The Assembly of New Brunswick, however, finally took the view in March 1849 that the lazaretto on Sheldrake Island had thus far proven to be a failure since the vast majority of lepers in the province were outside the institution and since the nine patients inside had been found in a wretched state of existence. It had proven impossible to apprehend those "lepers" who had absconded inasmuch as their friends had shown every disposition to help them hide rather than subject them to the misery of being sent back to the island. Thus the expense to the Province in maintaining the lazaretto was greatly out of proportion to any good that was being derived.³⁴ As a more practical alternative, the Assembly voted to move the "leper home" from the island to a point on the coast near Tracadie. They optimistically claimed that such a plan would allow the institution to be maintained for the small annual expenditure of about 460 pounds.³⁵

The new site for the leprosarium near Tracadie was situated in a dreary spot. On the east was the uninterrupted and turbid sea. On the west stretched the long low lying coastal plain, dotted here and there by huts of fisherman and farmers. The whole landscape was dull, desolate, and monotonous.³⁶ The new lazaretto was a square wooden barracks-like building, barely capable of withstanding the fierce winter winds that swept off the bay. It was surrounded by a wooden fence some fifteen feet high and impregnated with nails, "so as to prevent all intercourse with the other part of the community." The "lepers" were so incensed at the erection of this wall that they attempted to thwart

³³ A special investigating committee concluded that: "the Lazaretto on Sheldrake Island has thus far, in a great measure, proved a failure; That it has neither had the effect of keeping the Lepers together, free from intercourse with the other inhabitants, nor of alleviating the sufferings or bettering the condition of the afflicted." *Journal of Assembly, 1849*, p. 169.

³⁴ *Ibid.*, pp. 169-170.

³⁵ *Ibid.*, p. 169; Lejat, *Le Lazaret de Tracadie*, p. 95.

³⁶ For the general social and economic picture of New Brunswick at this time see W. S. MacNutt, *The Atlantic Provinces: The Emergence of Colonial Society, 1712-1857* (Toronto: McClelland and Stewart, 1965).

the efforts of the construction workmen. Thus the Board "was led into considerable additional expense in the employment of additional guards; still they [the lepers] persevered."³⁷

By September, 1849, all thirty-one of the persons known to be afflicted with leprosy in New Brunswick were in the new Tracadie lazaretto. Three years later, on September 5, 1852, again one of the patients set the hospital on fire and it burned to the ground.³⁸ Since it was too late in the year to construct a replacement, the thirty-eight inmates were forced to spend the winter in a thirty-two by thirty foot building which had formerly been used as the jail for delinquent "lepers." Here they were virtually left to rot for the winter months as the bodies of unattended dead patients were allowed to lie in bed for days at a time.³⁹ When Reverend Gauvreau was summoned to administer the sacraments to a dying girl during that miserable winter, he had to step over a dead body in the midst of the sleeping lepers and found the girl in such a pathetic condition that he took a sponge and washed her sores before giving her the last rites.⁴⁰ The Board merely noted in its report that "it will be necessary to erect a larger building early next summer similar to the one which was burnt; but to be built more secure, with iron gratings on the windows." They were confident that the new lazaretto structure would be more impregnable.⁴¹

"I have much pleasure in being able to state that the new building is far superior to the former one . . . it has been made properly secure with iron gratings on the windows, and the patients are locked up every night between sun down and dark. . . . Some of the most loathsome have died."⁴² So, in 1853, wrote Board secretary James Davidson, the most perceptive of the first generation of lazaretto administrators. He added, with a rare insight, that these hopes were sometimes less than rational: men took shelter in such institutions in despair of any other solution.⁴³

³⁷ "Report on Lazaretto Establishment at Tracadie," January 15, 1851, in *Journal of Assembly, 1851*, Appendix, p. cxx.

³⁸ "Lazaretto at Tracadie: Report of the Secretary for the Year 1852," in *Journal of Assembly, 1853*, Appendix, p. clxiii.

³⁹ M. de Bellefeuille, "The Lepers of Tracadie," p. 203.

⁴⁰ A. M. Pope, "Sisters of Hotel Dieu at Tracadie," *The Nightingale*, 1890, 5. 44.

⁴¹ "Lazaretto at Tracadie: Report of the Secretary for the Year 1852," in *Journal of Assembly, 1853*, Appendix, p. clxiii.

⁴² "Lazaretto: Reports of Secretary for the Year 1853," in *Journal of Assembly, 1854*, Appendix, p. ccxliii.

⁴³ *Ibid.*, p. ccxliv. About this time the first of a group of eleven cases of leprosy broke out on Cape Breton Island, six of whom consisted of a woman and her five children. There was also a

III

Five hundred miles to the south in Massachusetts and fifty years later, there is little evidence to suggest that the situation was developing much differently. The earliest mention of leprosy in Massachusetts is found in the 1825 bills of mortality for Boston compiled in *Paulson's American Daily Advertiser*. One death for the year is attributed to "Lepra."⁴⁴ A second case of leprosy in the State occurred in the mid 1870s. The patient was isolated at the Gallops Island Quarantine Station, maintained by the city of Boston, where he soon died. Several years thereafter, another leprosy victim was discovered by the Board of Health in East Boston, followed by a fourth case in 1880. The latter case was a man named Charles Wilson who had been born in Cuba. He had the anaesthetic form of the disease and eventually had to have his foot amputated at the Massachusetts General Hospital. Later he evidently left the State.⁴⁵

On December 10, 1882, Charles D. Derby returned home to Salem, Massachusetts, after an absence of thirty years. An intelligent man, he possessed an avid interest in botany and had most recently been employed by the Queen of Hawaii as her gardener. But some eight years prior to leaving the islands for home he noticed that small brown spots were emerging on his arms. His condition gradually worsened and by the time he disembarked from his ship on the Salem, Massachusetts, wharf, he was a pitiful sight. Derby's face was so distorted that his sister had difficulty recognizing him. It was covered with tubercles of variable size, one eye was destroyed by infection and the other dimmed, and his toes were ulcerating and discharging pus. Furthermore, his voice was a mere croak.⁴⁶ Derby remained at his sister's house only one night as

son-in-law and two children, and another son-in-law whose wife was not a leper, but he used to sleep with one of his leper brothers-in-laws. The other case waited on one of the sons and washed and laid him out after death. The first case became affected in 1852 and the last in 1870. All were dead before 1882, except the last, and he was far advanced. It is worthy of notice that the mother of these children and first of the group was born on Prince Edward's Island in 1836, which island is not far from the New Brunswick seat of leprosy. See A. McPhedran, "Leprosy in Cape Breton, Nova Scotia," *Canadian J. Med. Sci.* 1881, 6: 271.

⁴⁴ "Statement of deaths in the City of Boston for the year 1825," *Philadelphia J. Med. & Physical Sci.* 1826, 12: 415.

⁴⁵ J. W. Proctor, "Leprosy in Massachusetts—its diagnosis and segregation," *Amer. J. Public Hyg.* 1907, 17: 88-89.

⁴⁶ Samuel W. Abbott, the Fourth Annual Report of the [Massachusetts] *State Board of Health* (Boston, 1883), p. 3. The editor of the *Boston Medical and Surgical Journal* gleefully reported: "The neighboring city of Salem, the old rival of Boston in commerce with distant

rumors quickly spread among the Salem townspeople that he had the dreaded leprosy. In the morning he was forced to go to the local almshouse and was isolated in an attic room while a temporary shack was being constructed for him outside. His general condition quickly became more feeble, however, and he died less than three months later.⁴⁷

The next few cases of leprosy in Massachusetts were sporadic and rare so that the disease was not viewed as a significant problem. A case in 1889 was reported and, although advanced cases were found in 1895 and 1896, detention was quickly arranged at the Gallops Island Quarantine Station in Boston Harbor until both died a short time later.⁴⁸ Then in 1904 three cases occurred in rapid succession. In April, Frank Pena, a thirty-seven-year-old father of eight children, was pronounced a "leper" and isolated in a small house at Harwich. This house was ordered to be burned down as soon as he was removed. This precaution was not enough for the Harwich townspeople, however, as they immediately began protesting against the presence of a "leper" in the town. Less than two months later, Goon S. Dub, a twenty-three-year-old Chinaman, was found afflicted with the same disease in Boston. Then in October, a sailor named John Roderick was admitted to the Marine Hospital at Chelsea and subsequently discovered to be afflicted with leprosy.⁴⁹

At first an attempt was made to place these victims in the Massachusetts State Infirmary but the trustees strongly objected on the grounds that it would "disturb the peace of mind of about 1,800 other inmates." Furthermore, they did not think that the State Hospital was

lands, has reasserted her claim to her old preeminence by becoming possessed of a case of advanced leprosy, of the genuineness of which there seems to be no question. The subject, a former citizen of the town, contracted the disease in the Sandwich Islands, from whence he escaped to San Francisco, to avoid being transferred to Molokai, the leper colony of those islands, and poverty and the malady finally drove him back to his old home, where the city authorities have been somewhat exercised as to the ultimate disposition to be made of this unusual importation. We believe this may be considered the only known example of true leprosy at present in this part of the country, though not long since a case was under Dr. J. C. White's treatment at the Massachusetts Hospital, another was formerly known in Boston, and a third case was discovered about a year ago in Providence. These three cases had all escaped from the lazaretto at Tracadie in New Brunswick." See "Leprosy: a case in Salem, Massachusetts," *Boston Med. & Surg. J.*, 1883, 108: 18.

⁴⁷ Proctor, "Leprosy in Massachusetts," p. 89.

⁴⁸ *Ibid.*, pp. 89-90.

⁴⁹ *Twenty-sixth Annual Report of the State Board of Charity of Massachusetts* (Boston, 1904), pp. 17-26.

the appropriate place for "that much-dreaded disease."⁵⁰ Seeking some sort of asylum for the oppressed leprosy victims, the State Board of Charity then purchased a sixty-eight acre farm near the Cape Cod town of Brewster for use as a "leper colony." This act caused an indignant outcry from area residents who, in a hearing held at the State House on January 6, 1905, emphasized the great damage that would be done to the tourist trade and the sale of local cranberries. They argued that even if leprosy was not wildly contagious, people believed it to be so and would avoid the locality and its products, driving town property values and tax revenues downward.⁵¹

The Brewster townspeople generously offered to repurchase the intended "leper farm" at a profit to the State and suggested that some remote island off the coast be selected instead. To this end, the Massachusetts State legislature quickly passed an act authorizing the Board of Charities to take land by purchase or by power of eminent domain for the erection of a "leper hospital" and provided \$50,000 for the task. This legislation was aided by the fact that two more "lepers" had been discovered in January and April of 1905.⁵²

Thus, historic crescent-shaped Penikese Island was speedily purchased. It was about seventy-four acres in size and was thought to be

⁵⁰ *Ibid.*, p. 24; "Leprosy in Massachusetts," *Boston Med. & Surg. J.*, May 12, 1904, 150: 519.

⁵¹ "Statement of Dr. Frank H. Parker, Superintendent of the State Leper Colony of Massachusetts," in 64th Congress, 1st Session, Senate Report, No. 306, *Care and Treatment of Persons Afflicted with Leprosy* (Washington: Government Printing Office, 1916), pp. 52-53; *Boston Globe*, January 7, 1905; *Boston Herald*, January 7, 1905. After describing the horrors and course of Tubercular Leprosy, the old Roman Physician, Aretaeus, added "seeing the afflicted with this disease are such, who would not fly them, or who would not turn aside from a leper, even although he was a son, or a father, or a brother, since there is fear lest the disease should be communicated?" Francis Adams, *Extant Works of Aretaeus, The Cappadocian* (London: Sydenham Society, 1956), p. 366.

⁵² *Annual Report, State Board of Charity, 1905*, p. 19. It was still a problem to locate such an island. Protest against the proposed leper hospital on one of the islands off the southern coast of Massachusetts appeared in one of the daily papers under the caption "No Use for Lepers on Buzzard's Bay." The editor of a Boston medical journal remarked:

"Popular prejudice, as usual, must voice its opposition to anything new in plans for public health, but an unusual amount of hostility goes into this protest. To the western mind, on account of the rarity of leprosy among us, and possibly because of biblical associations, and under the influence of those half-acknowledged superstitions which lie dormant in most New England minds, this disease stands for utter degradation, and its victims are loathsome to a degree. However clear it may be that leprosy must receive State care, no community will welcome lepers as neighbors. The story of Father Damien may be known and appreciated, but very few people have any inclination to follow his example."

See "The Proposed Leper Hospital for Massachusetts," *Boston Med. & Surg. J.* 1905, 153: 123.

sufficiently isolated in Buzzards Bay since it was about fourteen miles south of New Bedford and seven miles from the nearest mainland. Made up of a diluvial drift pushed southward by the last great ice cap, the reddish sandy soil was impregnated with boulders of various sizes. The highest point on the grass covered island was eighty-six feet. As an added barrier to insure isolation, treacherous rock formations encircled the island, and at the sole landing point only three feet of water was available at low tide. This prevented all but the smallest boats from approaching.⁵³

The only remaining buildings on Penikese at the time of the purchase were a farmhouse, a barn, and the stone foundation of an old building that had served as the site of Louis Agassiz's ill-fated School of Natural History in 1873. The school dormitory had long since been destroyed by fire. The farmhouse was repaired for the use of the medical superintendent and four small cottages measuring twenty-seven by thirty-six feet were built for the patients at a cost of \$4,000 each, as distant as was practical from the physician's quarters. Furthermore, a small cat-boat was purchased which was sufficient to navigate Buzzards Bay in fair weather. To provide for an adequate water supply, a 10,000 gallon reservoir was constructed at the highest point on the island, some eighty feet above sea level.⁵⁴

⁵³ *Annual Report, State Board of Charity, 1905*, p. 22. E. Hitchcock, *Geology of Massachusetts* (Boston, 1841), p. 379. Penikese Island is steeped in history. It was first discovered by the explorer Bartholomew Gosnold who with thirty-eight other settlers embarked from England on March 26, 1602, with the intention of settling in Virginia. Mistakenly sailing into Buzzards Bay on May 24, 1602, they discovered Penikese and Cuttyhunk Islands, landing on the latter and building a fort named Elizabeth in honor of their queen. Although the settlement was soon abandoned, Penikese and Cuttyhunk Islands had the distinction of being explored eighteen years before the landing of the Pilgrims on the celebrated Plymouth Rock. The editor of the influential *Boston Medical and Surgical Journal* commented: "The problem before the State was to find a spot far enough removed to render contagion impossible, to give complete isolation, and to allow some healthful freedom to the unfortunate victims themselves. The island chosen by the Board certainly answers these requirements, and we predict that if Buzzard's Bay can conquer its present prejudices, time only will be needed to make the leper colony on Penikese nothing but an improvement for the State, and no menace to local property." See Editorial in volume 153 (January 28, 1905), p. 123.

⁵⁴ *Annual Report, State Board of Charity, 1905*, p. 22, 1910, p. 13; *New York Daily Tribune*, February 11, 1906. New York industrialist, John Anderson, had given the property to naturalist Louis Agassiz for the establishment of a summer school of biology. This enterprise lasted only for the summer of 1873 and was then terminated due to the death of Agassiz in December 1873. The island then reverted back to Anderson who sold it to a speculator in 1883 from whom it was acquired by the Commonwealth of Massachusetts twenty-two years later. See Louis Agassiz, *The Organization and Progress of the Anderson School of Natural History* (Boston, 1874), p. 304. John Greenleaf Whittier's poem commemorating the Penikese Island

On November 18, 1905, Louis Edmunds, the physician who discovered the leprosy patient in Harwich and who had been chosen superintendent of the colony, journeyed by boat to the island with the five Massachusetts "lepers." Almost immediately he noticed that the occupants of the adjacent islands of the Elizabeth group did not care to cooperate with or work for the leprosy colony at any price. This unfriendliness, and in some cases downright hostility, made transportation and communication with the outside world extremely difficult since the hospital's small catboat was unable to traverse the bay in bad weather or during the entire period from December to April when the craft had to be hauled ashore to protect it from the frequent severe storms that pounded the island. Neighbors on the mainland, fearing contagion, were incensed that Penikese employees should even be allowed to come off the island for a week's vacation.⁵⁵

The initial reactions of the patients to their apparent life sentence on Penikese Island were mixed. Frank Pena, the first of the recently diagnosed group, worried about the welfare of his wife and eight children, the youngest of which was less than a year old. It was remarked by the physician who drove him by carriage to the boat landing that Pena was "of good disposition, and I think realizes what he has, but, like consumptives, still hopes that he will get well." Another patient, fifty-four year old Charles Beals, badly disfigured by the disease, insisted that he had contracted leprosy while handling dirty and very foul smelling packages of foreign money as a messenger for the Adams Express Company and was entitled to some recompense. Naturally, he was pessimistic and depressed. According to Dr. Edmunds' reports, the other three inmates passively accepted their sentence.⁵⁶

During the winter, the hospital was reported as being "as remote from America in time and accessibility, almost as the ports of Europe." Furthermore, the tempestuous colder months mandated that Penikese Hospital employees at all times be prepared for a weather siege of from one to four weeks duration. Employee turnover proved to be extremely high as eighty-seven different people occupied the ten regular positions during the first decade of operation. Numerous other individuals accepted employment only on a temporary basis. Dr. Edmunds himself

school is reprinted in Jules Marcou, *Life, Letters, and Works of Louis Agassiz* (New York, 1896), II, 203-206.

⁵⁵ *Annual Report, State Board of Charity, 1915*, p. 91.

⁵⁶ Proctor, "Leprosy in Massachusetts", pp 90-93.

remained only one year before being replaced by Dr. Frank Parker.⁵⁷ Most of the workers found their jobs extremely distasteful. The lay nurses did not relish their assigned duties of bathing the leprous patients, binding up their sores and ulcers, and keeping their cottages clean. Solitude was another problem. While on a clear day one could see the smokestacks of New Bedford from the hill on Penikese, there was no direct contact with other people. It was reported that "the little family of patients and their attendants, the domestic animals, the larks and bobwhites and the gulls, make up the sum total of animate nature." Moreover the environment of solitude was deadly as "a constant sameness saps the sweetness from the best personality, ruffles the gentlest temper and tends to create petty jealousies and feuds in miniature. And so it is with Penikese."⁵⁸

For the patient, it was even worse as he was "racked often with rheumatic pain and burning with leprous fever." Indeed the Board of Charity described the typical patient as a person without hope who was committed against his will "to this no-man's land, so empty of all sounds and associations that his experience in life has made companionable and comforting to him."⁵⁹ Hostility among the inmates was common on Penikese Island. They would often slam their cottage doors and quickly draw their blinds on hearing the approach of another, refusing to be seen or speak. Furthermore, they exhibited antagonism toward the administration through such pranks as childishly wasting large quantities of food and letting water faucets run all night, endangering the very limited supply. The medical superintendent was asked to furnish "all sorts of delicacies to be discarded, a variety of pets to be neglected, and a garden to be forgotten." The superintendent observed in 1909 that "the inmates have a feeling that they are entitled to a freedom of action and the privileges which the inmates of no other State institution enjoy."⁶⁰

The administration building which housed the superintendent and his family and all general employees was situated on the north side of the island, a judicious distance from the patient's cottages on the southerly shore. Near the patient's quarters, a small ten-bed hospital was built which also contained a general kitchen and dining room. The "lepers" had the freedom to walk about the island at will with the exception of

⁵⁷ *Annual Report, State Board of Charity, 1915*, p. 93.

⁵⁸ *Ibid.*, pp. 94-95.

⁵⁹ *Ibid.*, p. 94.

⁶⁰ *Annual Report, State Board of Charity, 1909*, pp. 99-100.

the administration house which was normally off limits.⁶¹ Unfortunately on the morning of January 13, 1912, while the temperature on Penikese stood at four degrees below zero, the administration house and nearly all its contents was destroyed by a raging fire. Since it contained the office and living quarters of the superintendent and staff as well as the kitchen for both employees and patients, it had to be quickly replaced at considerable expense. With this and other construction projects, the Board of Charity was forced to accept outrageously high bids for construction labor due to the unpopular social and environmental conditions on the island. The physical plant was eventually enlarged so that it provided space to accomodate as many as twenty-four patients.⁶²

Eight years after the Massachusetts "leper colony" was founded, the Board of Charity observed that Penikese was inevitably tending "to become less and less a hospital and more and more a mere dumping ground for persons cast out from society and shunned by all men." To rectify this dreary assessment, the Board in 1912 set up a cooperative arrangement with Harvard Medical School to develop Penikese as a laboratory for scientific research into the pathology of leprosy. Toward this end, a second physician, Dr. James A. Honeij, was employed along with two additional nurses and an orderly. Under the supervision of Dr. Honeij, this plan did yield nearly a dozen scientific articles on leprosy in such journals as *The Boston Medical and Surgical Journal* and the *Journal of Medical Research*.⁶³ The basic treatment for leprosy at Penikese was described as very similar to that of "pulmonary tuberculosis—fresh air, sunshine, unbroken sleep and a regular and ample supply of nourishing food." The only medication found to be of any use was chaulmoogra oil but none of the patients was ever discharged as "cured."⁶⁴

⁶¹ *Annual Report, State Board of Charity, 1915*, p. 90.

⁶² *Annual Report, State Board of Charity, 1912*, p. 58.

⁶³ *Annual Report, State Board of Charity, 1912*, p. 59. The following articles were based on research carried out on Penikese Island: S. B. Wolbach and James A. Honeiu, "A critical review of the bacteriology of human and rat leprosy," *J. Med. Research*, 1914, 29: 367-423; James A. Honeij, "Leprosy: some notes on symptoms," *Boston Med. & Surg. J.*, 1914, 170: 85-87; James A. Honeij, "Leprosy: the pulse as a possible indicator of the progress of the disease," *Boston Med. & Surg. J.*, 1914, 170: 233-235; S. B. Wolbach and James A. Honeij, "The diphtheroid bacillus from leprosy lesions," *J. Med. Research*, 1914, 30: 1-8; James A. Honeij and Frank A. Parker, "Leprosy: flies in relation to the transmission of the disease," *J. Med. Research*, 1914, 30: 127-130; *Annual Report, State Board of Charity, 1915*, p. 98.

⁶⁴ *Annual Report, State Board of Charity, 1915*, p. 102. The Board adamantly refused to admit the leprosy persons of other states although such a boarding policy would have con-

IV

By way of comparison, medical care at Tracadie was almost non-existent up to 1880. Dr. Alexander Key, a member of the initial investigating commission found that the "lepers" absolutely refused his prescriptions for internal remedies, although a few would allow him to apply external applications. Key soon gave up his attempts at treatment and absolutely no medical care was provided.⁶⁵ Then, in December 1849, hope was stirred with rumors circulated relative to a remarkable cure for leprosy that had been developed by one Charles LaBellois, who purported to have formerly been a surgeon in the French Army and was now practicing medicine on the North Shore of Bay Chaleur. The Board of Health was induced to invite LaBellois to visit the lazaretto with the understanding that the patients or their families would have to pay for his services.⁶⁶

Dr. LaBellois insisted that the inmates were simply suffering from syphilis—not leprosy—and began treating them for this.⁶⁷ His success was quick. With the cooperation of Reverend LaFrance, a member of the Board, he summarily dismissed three longstanding cases as cured. Moreover, he claimed that ten other cases were almost free of the disease. When several other medical men were brought in to substantiate LaBellois' remarkable success, they found that he had conspired to put several children and a number of adults in the lazaretto "merely for the purpose, as we suppose, of making it appear that he had succeeded in effecting a cure."⁶⁸ Thus the lazaretto was closed to LaBellois in 1852 and, for ten years more, no medical care was rendered.

An official visit by Lieutenant Governor Arthur H. Gordon in May of

stituted a much-needed source of revenue. Thus the urgent pleading of health authorities in Kentucky, South Carolina, Rhode Island, Pennsylvania, and Washington, D. C. were all turned down even though at least one state "sought, by approaching the Governor, to bring pressure to bear upon the Board to receive its case." It was the continual hope of the Board that the Federal Government would assume the care and treatment of leprous Americans as the protection of the collective public from leprosy would justify such action under the constitution of the United States. *Annual Report, State Board of Charity, 1915*, p. 105.

⁶⁵ "Report of medical officer in charge of Lazaretto at Sheldrake Island," *Journal of Assembly, 1845*, p. 170.

⁶⁶ "Lazaretto, Sheldrake Island and Tracadie: Report from the Board of Health for Gloucester and Northumberland," *Journal of Assembly, 1850*, Appendix p. cx.

⁶⁷ "Report of Charles M. LaBellois, Surgeon, regarding the Tracadie Disease," *Journal of Assembly, 1850*, p. 160.

⁶⁸ "Lazaretto: Reports of secretary for the year 1853," *Journal of Assembly, 1854*, Appendix, p. ccxlv.

1862 and exposure to the plight of the inmates caused him to appoint Dr. James Nicholson to minister to the physical needs of the patients.⁶⁹ Nicholson's only contribution appears to have been his use of mysterious vapors, the formula for which he kept a profound secret, and his ability to get the patients to take outdoor exercise and play games. The Board noted approvingly that "the unfortunate lepers now wile away their time pleasantly." Unfortunately, Dr. Nicholson quit the lazaretto after less than year on the job.⁷⁰

The next self-styled miracle man was the parish priest, Reverend Gauvreau, who in July of 1864 asked the Board for permission to be allowed to use certain unspecified medicines on the helpless "lepers" in order "to effect a thorough cure" and "eradicate the disease from the human system."⁷¹ Reverend Gauvreau was no more successful than his well-meaning predecessors and only succeeded in knocking the lazaretto's finances out of balance by spending money for a great supply of medicines.⁷² Dr. Alfred C. Smith of Newcastle, Northumberland, was then appointed "visiting physician," from May 1865 to May 1868, which meant that he looked in on the patients once or twice a year.⁷³

In 1868 several nursing sisters, known as Les Religieuses de l'Hotel-Dieu de Saint Joseph de Tracadie, went to the lazaretto from the Hotel-Dieu, Montreal. According to the sister superior:

On our arrival at Tracadie we found twenty inmates of the hospital. These poor creatures, being firmly persuaded that we could cure them, besieged us with entreaties for medicine, and were satisfied with whatever we gave.⁷⁴

She added that "I have administered to these patients the remedies as prescribed by Mr. Fowle—*Fowle's Humor Cure* an American patent medicine. In all of them the mouth and throat improve with the use of

⁶⁹ "Dispatch from Lieut. Governor Gordon to the Duke of Newcastle, 13th April, 1863," in *Report on Leprosy by the Royal College of Physicians*, p. 203.

⁷⁰ "Tracadie Lazaretto: Annual Report for the Year 1862," in *Journal of Assembly*, 1863, No. 13., p. 17; *ibid.*, 1863, in *Journal*, 1864, p. 10.

⁷¹ "Annual report on the Lazaretto at Tracadie for 1864," in *Journal of Assembly*, 1864, Appendix xvii, p. 1.

⁷² "Annual report on the Tracadie Lazaretto for the Year 1865," in *Journal of Assembly*, 1866, Appendix xiii, pp. 1-2.

⁷³ *Ibid.*, "Report of medical attendant: of Lazaretto for 1865," pp. 2-3. Alfred C. Smith, M.D. was of the opinion that the leprosy, "as it exists here, is slowly exhausting its fuel, as it has done in some other parts of the world where it has existed, and that in the course of time the Hospital can be closed."

⁷⁴ A. M. Pope, "Sisters of the Hotel Dieu at Tracadie," *The Nightingale*, 1890, 5: 44.

Fowle's cure. And here let me say that this disease throughout bears a strong resemblance to syphilis."⁷⁵

The nuns told a visiting physician that there were three modes of death at the lazaretto. Generally the "lepers" died of "consumption." They coughed much, spat up a good deal, and gradually became weak, lost flesh, and wasted away. The pigmented "lepers" might "choke," and die suddenly; or lastly, a leper previously in moderate health, might suddenly vomit up a large quantity of matter and die almost immediately.⁷⁶

An escaped nineteen-year-old "leper girl" from Tracadie met with no sympathy or understanding upon discovery in Providence, Rhode Island, in November 1877. According to the *Providence Journal*, prior to disclosure the girl had lived in the city two or three years as a servant in several families, during which time the disease had rapidly developed to a very advanced stage. Upon news of her presence, the city fathers quickly had her shipped back to Tracadie. Reverend Babineau, a Tracadie priest, told curious reporters that the girl "persists in saying that she will not remain, but will go again. We will endeavor to keep her by force if no other way will do."⁷⁷

In 1879, just prior to the absorption of the lazaretto by the Canadian federal government, the Sister Superior reported that there were sixteen patients in the institution, six men and ten women. She added that since we have been in charge, that is since October 1868, forty-seven patients have died."⁷⁸

V

It is significant to note that early advocates of the New Brunswick and Massachusetts lazarettos tended to pride themselves on approaching the "leper problem" in a religious spirit. Certainly the "lepers" presented a picture grossly repugnant to men of moral sensibilities. Although Biblical and modern leprosy are probably not the same disease the practice of segregating "lepers" in New Brunswick and

⁷⁵ M. de Belleville, "The lepers of Tracadie," p. 203.

⁷⁶ W. H. Thornton, "A visit to the Lazaretto, a leper infirmary at Tracadie, New Brunswick," *Canada Med & Surg J.*, 1881, 9: 521-529.

⁷⁷ *Providence Journal* [Providence, Rhode Island], November 21, 1877, p. 1.

⁷⁸ James C. White, "Leprosy in America," *Transactions of the American Dermatological Association, Second Annual Meeting, 1878*, (New York: D. Appleton and Company, 1879), pp. 58-59.

Massachusetts had its origin and stimulus in Biblical precedent. An additional source of stigma was the fact that most God-fearing New Englanders and faithful New Brunswick church-goers knew that every "leper" mentioned in the Old Testament was afflicted because of some specific sin: Miriam talked disrespectfully to God's chosen servant Moses and was smitten; Gehazi acted to bring the name of Israel into disrepute among the heathen; and King Uzziah burned incense on the golden altar of the Temple and was smitten with incurable leprosy. It was easy for those reared in this ethic to infer, consciously or unconsciously, that the "lepers" must have in some way violated the will of God, otherwise they would have not been afflicted with this extremely rare disease.⁷⁹

As tracing indigence to poverty implies the moral responsibility of the poor for their own misfortune, so does tracing leprosy to sin imply the depravity of the "leper." The condescending solicitude for the leprosy as well as for the poor chiefly served to confirm the superiority of virtue over vice and was characteristic of societal attitudes. As Cotton Mather put it centuries ago, "sickness is in fact the whip of God for the sins of man." Leprosy was regarded by many as symbolically signifying sin and commonly referred to as the disease of death.⁸⁰ There has always been a deep primitive fear of leprosy in men—a fear oftentimes reinforced and overlaid by religious fear. Based on the victim's chronic skin blemishes, ulceration of the extremities, protracted disfigurement and mutilation, coupled with the assumption that it is highly contagious, a leprophobia seems to inevitably result in societies at all stages of civilization.⁸¹

⁷⁹ For the traditional and popular view of Biblical leprosy see: Rabbi Rabbinowicz's *La médecine du Talmud* (Paris, 1880), p. 107; H. P. Lie, "On leprosy in the Bible," *Acta Dermato-Venereologica*, 1937, 18: 524-545; H. W. Hill, "The non-identity of modern leprosy and Biblical leprosy," *Amer. J. Pub. Health*, 1914, 4: 605-608; K.P.C.A. Gramberg, "Leprosy and the Bible," *Trop. & Geog. Med.*, 1959, 20: 127-139; Leon Goldman, et al., "White spots in Biblical times," *Arch. Dermatology*, 1966, 93: 744-753; R. G. Cochrane, "Biblical leprosy—a suggested interpretation," *The Life of Faith*, 1956, 80: 1-2; Frederick C. Lendrum, "The name 'leprosy,'" *Amer. J. Trop. Med. & Hyg.*, 1952, 1: 999-1008. Also see the exhaustive study by Morris Jastrow, "The so-called 'leprosy' law: an analysis of Leviticus, chapter 13 and 14," *Jewish Quart. Rev.*, 1914, 4: 357-418. For another version by a Polish scholar see: J. Fels, "O zaraath biblij hebrajskiej; przyczynek do historyi tradu," *Przegląd Lekarski* (Krakow), 1901, 40: 509, 522. The most recent reiteration is S. G. Browne's pamphlet, *Leprosy in the Bible* (London: Christian Medical Fellowship, 1970), pp. 1-20.

⁸⁰ Quoted in Rudolph Altrocchi, *Sleuthing in the Stacks* (Cambridge: Harvard University Press, 1944), pp. 41-42.

⁸¹ In this connection see A. Lutz, "Leprophobia," *J. Cutaneous & Genito-Urinary Dis.*, 1892, 10: 477-479; S. G. Browne, "Leprophobia," *West African Med. J.*, 1965, 14: 175-180; G. L. Fite, "Leprosy, society, and Hansen's disease," *Internat. J. Leprosy*, 1956, 14: 457-463;

The strength of primitive and religious superstition is underlined by the folklore of leprosy. There are numerous examples of the unjust being cursed with leprosy. Loomis, in *White Magic*, relates how a bold woman who danced naked in church was stricken with leprosy. An Irish myth portrays utmost humiliation through the kissing of a "leper" as punishment. In India one of the fallen Gods of Abstraction is the "Devil of Leprosy." Tuamotuan mythology holds that "lepers" control the winds.⁸² An established cure for leprosy, from ancient Egypt and China down into the Middle Ages, was the blood bath. Such blood was, according to folklore, to come from an innocent person, preferably a child or a virgin. To fill a bathtub it was necessary to slay anywhere from ten to fifty children.⁸³

Fundamental irrational fear of leprosy rests particularly on a morbid and instinctive terror of infection. It was the predominant view that leprosy was dirty, venereal, highly infectious, and facilitated by bad hygiene and sexual promiscuousness. Thus while the insane of New Brunswick were provided with "a magnificent structure erected at great public expense," complete with the most liberal comforts of the time, the run-down charnel house known as the lazaretto was considered good enough for those suffering from leprosy. The New Brunswick public showed a remarkable disposition to ignore the leprosy problem, possibly because its recognition underscored their own vulnerability to the disease.⁸⁴

Official ideologies often reveal less than off-hand remarks. Perhaps all the time and energy the Massachusetts State legislature spent on documenting the horror and dangers of "epidemic leprosy," meant less than the off-hand remark of one prominent Cape Cod resident who declared at a hearing: "I am full of sympathy for them [the lepers]. My heart is warm for them, but I, for one, do not want to see them on Cape Cod."⁸⁵

As we have thus implied, the most fundamental emotional response

Zachary Gussow and George S. Tracy, "Status, ideology, and adaptation to stigmatized illness: a study of leprosy," *Human Organization*, 1968, 27: 316-325.

⁸² See William George Black, *Folk-Medicine, A Chapter in the History of Culture* (London: Elliot Stock, 1883), p. 74; C. Grant Loomis, *White Magic: An Introduction to the Folklore of Christian Legend* (Cambridge: Harvard University Press, 1948), p. 97; Tom Pete Cross, *Motif-Index of Early Irish Literature* (Bloomington: Indiana University Press, 1952), p. 162.

⁸³ See N. B. Dennys, *The Folklore of China and its Affinities with that of the Aryan and Semitic Races* (London, 1876), p. 67.

⁸⁴ Bayard, "An essay on Greek elephantiasis . . . in Tracadie," p. 229.

⁸⁵ Quoted in *Annual Report, State Board of Charity, 1915*, p. 93.

toward the "leper" in New Brunswick and Massachusetts was one of fear. The local inhabitants' observations, then, were so distorted by the lens of anxiety, that they were almost incapable of seeing the diseased victims clearly. Indeed a barrage of remonstrance brought the "lepers" lives into public notice and focused attention upon a tiny minority of the population whose very existence mocked the sense of community propriety. Medical men, whether sympathetic or not toward the wild fears raised by the newspapers, almost unanimously concurred in believing incarceration of the "lepers" to be of vital importance. Tied inextricably to the more narrowly bureaucratic aspect of providing for the common safety against the "leper" menace was perhaps a social attitude—an aristocratic paternalism.⁸⁶

It appears that both New Brunswick and Massachusetts overestimated the menace of the "leper" precisely because body image and the Bible were so important to them. An automatic conflicting value is the emphasis which Western society places on "body-whole" and "body-beautiful." Personal characteristics are attributed to an individual purely on the basis of physical appearance. Beauty often being associated with good and ugliness with evil. Deformities caused by disease are looked upon with much more disapproval, of course, than are deformities resulting from accidents. Special significance then is given to physical attractiveness, particularly of the face. With a general bias for physical perfection, disfigured "lepers" were at a great disadvantage. They were apt to be stereotyped as men and women who had led immoral lives.⁸⁷ Leprosy cases, untreated as they were, progressively developed gross facial deformities that were definitely shocking and repelling to others and evoked violent reactions of horror, repulsion, and pity. The leprosy victim was likely to share with his compatriots a confused horror of his disease and thus react with a strong feeling of guilt.⁸⁸

⁸⁶ Interesting comparisons with the reaction to leprosy in other cultures can be made by consulting: H. C. de Souza-Araujo, *Leprosy: Survey Made in Fourty Countries* (Rio de Janeiro: The Oswaldo Cruz Institute, 1929), "Leprosy: a survey of recent legislation," *International Digest of Health Legislation*, 1954, 5(1): 3-35; Eugene R. Kellensberger, "The social stigma of leprosy," *Ann. New York Acad. Med.* 1954, 54: 126-133.

⁸⁷ See Leonard Wood Memorial, *Combating Stigma Resulting from Deformity And Disease* (New York: The Memorial, 1969), pp. 4-11.

⁸⁸ See Jay F. Schamberg, "The unwarranted stigma of leprosy," *Survey*, 1929, 62: 111-113; Richard H. Rolston and Hilliard E. Chesteen, *The Identification of Psychosocial Factors Related to the Rehabilitation of Leprosy Patients* (Baton Rouge: The School of Social Welfare, Louisiana State University, 1970), pp. 103-118.

The "lepers" of Tracadie and Penikese can profitably be compared to those of the Middle Ages. Medieval man recognized that sources of error were responsible for the misery of his earthly vale of tears, the worst condition of which was leprosy, but these sources of error were the result of original sin, of man's state after the Fall. Consequently they could not simply be eliminated and such blemishes were somehow innate in human society. The Medieval man looked upon the leper as "created," and one who must therefore be spiritually "redeemed." By the nineteenth century, Western man's thinking was based on the assumption that there were sources of error which determine social and physiological conditions. These sources of error could be recognized by the intellect and consequently could be attacked scientifically and eliminated. With regard to leprosy in New Brunswick and Massachusetts, however, the social response exhibited an extraordinary reversion back to the Medieval reaction to the disease.⁸⁹

Under close scrutiny we find that both Tracadie and Penikese were the very epitomes of the so-called "total institution," with its attendant total regulation, total lack of privacy, and total dictation of rules and regulations by governing boards. The inmates were stripped of their personal identities, subjected to corrective sanctions and punishments by "the authority," and encouraged to act out the role of the perfect inmate. At Tracadie, any lay Board member had the vested legal authority to:

... at all convenient times in the day time, to visit, inspect, and examine any person or persons suspected to be labouring under or infected with the disease herein-before mentioned, and for that purpose to enter into any house, building, or inclosure in which it may be suspected that any such person or persons may be found, and to break open the same if necessary so to do in order to obtain entrance, and by order in writing under the hand of any member of such Board of Health to cause to be removed to the lazaretto all and every person or persons who, upon such examination and inspection, shall be found to be labouring under or infected with the said disease, there to be kept and detained subject to the rules and regulations made and ordained or to be made and ordained for the government of such lazaretto.⁹⁰

Amazingly enough, the Tracadie Board was insistant that every pos-

⁸⁹ Compare with the institutional-historical explanation of leprosy stigma offered by Zachary Gussow and George S. Tracy in "The use of archival materials in the analysis and interpretation of field daton: a case study in the institutionalization of the myth of leprosy as "leper," *Amer. Anthropologist*, 1971, 73: 695-709.

⁹⁰ Quoted in *Report on Leprosy By the Royal College of Physicians, 1867*, p.204.

sible indulgence consistent with the public safety was being given to the inmates. They bemoaned the fact that the "lepers" did not appreciate the Board's efforts on their behalf. For example, regarding visitors from outside, the Board observed that:

For a considerable time their friends were allowed to visit them once every month, but it was found on all occasions when escapes were made that they happened immediately after such visits, and the Board has no doubt but their plans were laid at such meetings; besides there was much greater dissatisfaction among the Lepers, and they gave more trouble than at any other time, and it was found that several articles were missing from the establishment immediately after their friends had left. In consequence, an order was made that all persons residing at Tracadie, who had friends in the Lazaretto, could only visit them twice in each year.⁹¹

Down at the Massachusetts lazaretto, very few relatives of the patients ever visited Penikese Island. Fear of contagion was too great and what is more the boat owners at New Bedford were afraid of having their craft contaminated by docking at the island. In addition, the Board of Charity was determined that the patients not be exploited nor made an exhibition of. Thus visiting was restricted to officials, relatives, and friends. The "merely curious" were kept out and even those who were admitted were not permitted to bring cameras on the island.⁹² The occasional problems with the outside public can perhaps be understood with more information. As the inmate population of Penikese continued to grow, the leprosy patients became perceived as more and more of a possible physical and social threat, even if only an imagined one, and the close geographic distance became a matter of considerable concern to the inhabitants of the adjacent Elizabeth Islands and the townspeople on the mainland.⁹³

An intensive analysis of Tracadie and Penikese uncovers bits and pieces of evidence indicating total social stagnation. To run through some of these quickly: the inmates hated their incarceration but, once convinced of the legitimacy of their leprous condition and status, soon embraced self-condemnation. Complete dependency, no motivation, rampant depression, uncontrolled dispondency, occasional mental break-down, and uncooperative conduct, were the almost inevitable consequences. Total group identification was apparently only of a nega-

⁹¹ "Lazaretto: Reports of Secretary for the year 1853," *Journal of Assembly, 1854*, Appendix, p. ccxliii.

⁹² *Annual Report, State Board of Charity, 1915*, p. 106.

⁹³ *Ibid.*, pp. 106-107.

tive type, developing in relation to the general dissatisfaction with the inferior physical environment and lack of expected comforts.⁹⁴

In both New Brunswick and Massachusetts, the outside public knew little about the lazarettos and the inmates were sympathized with only in the most abstract way. By February 1847 the Board at Tracadie reported that all twelve inmates of the lazaretto "appear to be satisfied that it [leprosy] is incurable; some of them are so satisfied of this that they have made up their minds never more to mingle with their families."⁹⁵ Inmates had to give up their hopes as to family life, a career, and such instinctive satisfactions as drinking and sex, and had to look forward to living in the lazaretto for the rest of their lives. One patient bitterly remarked to a visitor in 1847 that she "would rather eat a potato and some meat or fish at home with her family, then the best food in the Lazaretto."⁹⁶

There was a pervasive suffering at Tracadie. Abbé Gauvreau recalled:

I have been present at the last struggles of most of these afflicted mortals. I hope that I may never be called upon to witness similar scenes. Excuse me from the details. If I undertook them my courage would give out; for I assure you that many of you would have fainted. Let me simply add that these lepers generally die in convulsions, panting, for air; frequently rushing to the door to breathe; and, returning, they fling themselves on their pallets in despair.

The well-meaning priest added that:

The thought of their sighs and sobs, the remembrance of their tears, almost breaks my heart, and their prayers for succor ring constantly in my ears: "O my God! have mercy on me! have mercy on me!" At last comes the supreme moment of this lingering torture, and the patient dies of exhaustion and suffocation. All is over, and another Lazarus lies in Abraham's bosom!⁹⁷

We might offer a number of interpretations of the motivations of

⁹⁴ For example, it was noted in the "Annual Report for Tracadie for 1854" that, "the lepers are now quiet and peaceable; they appear to be reconciled to their fate, give less trouble than at any former period, and show no disposition to leave the establishment." For pertinent theory regarding total institutions see Erving Goffman, "Characteristics of Total Institutions," in *Symposium on Preventive and Social Psychiatry* (Washington: Walter Reed Army Institute of Research, 1967), pp. 43-84; Erving Goffman, *Asylums* (New York: Doubleday and Company, 1961).

⁹⁵ "Report from Commissioners of Lazaretto at Sheldrake Island," *Journal of Assembly, 1847*, Appendix, p. xciii.

⁹⁶ "Report of the Commissioners appointed . . . to visit and examine the Lazaretto and lepers upon Sheldrake Island," *Journal of Assembly, 1848*, p. 59.

⁹⁷ M. de Belleville, "The Lepers of Tracadie," p. 202.

those who dedicated their lives to caring for the leprous, suggesting that such men and women may be motivated by the desire to save their souls, to expiate guilt feelings resulting from dishonorable past deeds, and to perpetuate their names.⁹⁸ But there seems no good reason to doubt that whatever their supplementary motivations may have been, the six Sisters who took charge of Tracadie in October 1868 were sincere in their desire to improve the plight of the lepers.⁹⁹ "I am absolutely incapable of describing the state of abject misery in which our poor lepers passed their lives before the coming of the sisters" wrote Abbé Gauvreau in a letter of April 28, 1869. Indeed prior to their arrival he noted that "discord, revolt, and insubordination toward the government, divisions and quarrels among themselves, made the history of their daily lives. The walls rang with horrible blasphemies, and the hospital seemed like a den of thieves."¹⁰⁰ Instituting a regime of order and discipline, the nuns quickly segregated the sexes, cleaned up the rooms, kept the inmates clean, and planted a garden.¹⁰¹

As has often been the case in other parts of the world, only persons dedicated to religion could generally care for "lepers" on an intimate basis. Through their work such religiously motivated people achieved an inspiration and worthwhile identity. Tracadie visitors noted a distinct change in the social atmosphere of the lazaretto. Doctor Herman Hayd observed:

... you would be surprised to see the patient resignation and the cheerful manner which these poor lepers exhibit—due, I am sure, to the bright and sunny influence of these kind Sisters, and the comforting religion which sustains them, together with the splendid discipline of the institution. It provides hours for religious devotion and meditation, certain hours for recreation, which consists of boating, fishing, etc., and others for general social intercourse. In this way the mind is kept as cheerfully occupied as possible, and shows its salutary influence in a better physical condition of the patients.¹⁰²

A comparative look at the Penikese Island lazaretto reveals that, for

⁹⁸ In this regard see the thoughtful study by Yoshiko Ikeda, "An epidemic of emotional disturbance among leprosarium nurses in a setting of low morale and social change," *Psychiatry*, 1966, 29: 152-164.

⁹⁹ M. de Belleville, "The Lepers of Tracadie," pp. 198-202.

¹⁰⁰ *Ibid.*, pp. 198-199.

¹⁰¹ Pope, "Sisters of the Hotel Dieu at Tracadie," pp. 44-45.

¹⁰² Herman E. Hayd, "A visit to the New Brunswick Lazaretto," *Med. Record* [New York], 1887, 32: 450. See also George Henry Fox, "A Trip to Tracadie," *Med. News* [Philadelphia], 1883, 43: 275-276; J. E. Graham, "Leprosy in New Brunswick," *Canada Med. & Surg. J.*, 1884, 12: 153-159.

recreation, some of the patients kept a garden of flowers or vegetables. Others spent considerable time in the living room at the hospital building where they had access to talking machines, an organ, a pool table, and other games. Many of the patients had parrots in their cottages as cats and dogs were not allowed. Since there were so few inmates, Penikese patients were not clothed in the uniform suits that were required as an economy and identification measure at the other State institutions. Instead they were allowed reasonable choice in ordering clothing.¹⁰³

One patient who did much to enhance the dreary existence was Archie Thomas. He had been a seventeen-year-old high school student at Upton, Massachusetts, when he was diagnosed as having leprosy in March 1909. Assigned to Penikese Island, Thomas was eager to continue his study of physics and electricity, especially the science of wireless telegraphy. To this end he received various donations of books and instruments and the Woman's Club of New Bedford sent him, as a Christmas present, a work bench complete with electrical tools. With additional equipment purchased with cash donations inspired by the publicity of a Boston newspaper, Archie set up a first-rate wireless station complete with an antenna atop a forty foot electrical pole.¹⁰⁴

Archie's mother secured permission to spend the rest of her life with her son on Penikese Island and was accordingly employed as a nurse and helper. During the early months of World War I Archie used his wireless to pick up news from the Marconi News Service and each night his mother typed it on bulletins which she distributed to the patients. Archie's call number, IZP, became famous throughout the North Atlantic and other wireless operators were enthusiastic to hook up with Archie on the remote Penikese Island. When Archie died suddenly of pneumonia on February 17, 1915, the *London Times* noted that "the leper colony is thus deprived of an important means of communication with the outside world." Moreover, after Archie's death Mrs. Thomas reconsidered her decision to end her days in the leper colony and left the island due to loneliness.¹⁰⁵

Another patient, a Japanese male of considerable intelligence, sought escape from the island on two occasions and did succeed in reaching

¹⁰³ *Annual Report, State Board of Charity, 1915*, p. 97.

¹⁰⁴ Hyman Small as told to Stanley Stein, "An Old Timer Reminisces," *The Star* [Carville, Louisiana] (July, 1944), p. 3.

¹⁰⁵ *London Times*, April 3, 1915; *New York Times*, April 4, 1915, II, p. 6.

Boston on one of them where he was finally apprehended. This escapade brought him a place in New England folklore, for there is the tale of a "horrible Jap with no hands" who escaped from the leper colony to the Massachusetts mainland, causing havoc among the local mothers, who guarded their children with primitive fear. Just before his death on June 7, 1916, it was noted that "with the oncoming of the mental lethargy characteristic of the advanced stages of the disease, this patient has become peaceful and reasonably content."¹⁰⁶ A Chinese patient, a Boston laundryman by occupation before being sent to the island, did all the patient's washing and was paid \$3.00 a week for this unpopular chore. He regularly sent his money home to help pay for his son's schooling. It might be added that his case was soon cited as an example in an age-worn old wives tale of the poor woman who took her dresses to a Chinese laundry where a leprous Chinaman allowed scales from his skin to fall on the cloth as he ironed them and as a result the woman contracted leprosy.¹⁰⁷

VI

In appraising the work of a tax supported charitable organization two questions seem appropriate: How was the money used? Was it wisely spent? The second question is by far the more difficult of the two. The first question is easier to answer because the controlling boards of trustees for both Tracadie and Penikese kept careful records and rendered a public annual report of all major categories of expenditures. Between 1844 and 1880 the Tracadie board spent a total of just under \$127,300.00 to care for 190 different inmates: 81 females and 109 males. At least two dozen additional cases existed outside the lazaretto during this thirty-six year span. Unfortunately almost all the money went for provisions, groceries, clothing, furniture, fuel, and repairs.¹⁰⁸

An exposé of fraudulent management at the lazaretto, published in a series of articles in the Chatham weekly newspaper, *Miramichi Advance*,

¹⁰⁶ Kathleen Dean, "The shameful stigma of leprosy," in 81st Congress, 1st Session, Committee on Labor and Public Welfare United States Senate, *Hearing on a Bill to Improve the Leprosy Situation in the United States*, May 9, 1949 (Washington: Government Printing Office, 1949), p. 82.

¹⁰⁷ *Annual Report, State Board of Charity, 1915*, pp. 97-98.

¹⁰⁸ Figures derived from the annual reports and official financial audits of the Tracadie Lazaretto from 1844 to 1880 as published in the *Journal of Assembly, 1844-1880*, *passim*.

in January, February, and March of 1879, revealed that nearly all of the eleven members of the so-called Board of Health were in some way employed as contractors for supplies or labor in connection with the lazaretto. Moreover, relations between the paternalistic Board and the nursing Sisters were very poor. The nuns testified how the self-seeking Board members had mostly wasted the public money for the lazaretto since 1844 and deprived the inmates of its benefits.¹⁰⁹

Certain influential public men such as J. C. Tache, Deputy Minister of the Canadian Department of Agriculture, T. W. Anglin, a member of Parliament, and the Pastor of Tracadie, Reverend Babineau, came to the aid of the lazaretto and worked for an exception to the existing law of Canada which placed all charitable institutions under the provincial governments. The argument was the same that led to the federal absorption of the Massachusetts and Louisiana "leper colonies" in 1917—namely that leprosy was a totally unique disease that must be dealt with on the national level due to the great expense involved in protecting the general public from contagion. Subsequently, on November 25, 1880, the Tracadie lazaretto was formally transferred by the Province of New Brunswick to the government of Canada. On this occasion, the Mother Superior at the lazaretto thanked the federal authorities "in the name of the sick [lepers] to which we have devoted and maintain our lives."¹¹⁰

Some thirty-seven years later in Massachusetts, relief from the extraordinary expense of maintaining Penikese Island finally came on February 3, 1917, when Congress at long last enacted legislation providing for the establishment of a national leprosarium. Although the Board of Charity eagerly looked forward to the time when the expensive task of isolating and caring for "lepers" would be removed from the shoulders of the Commonwealth, the United States government did not open such an institution for nearly four more years. In the meantime, the State attempted to hold down the expenses at Penikese, with little success, as costs rose steadily. It was noted in 1920 that "never before has the institution had such a difficult time to procure and to keep help."¹¹¹ Finally on March 10, 1921, Penikese Island was abandoned and the thirteen remaining patients were transferred by tug to New

¹⁰⁹ "Report of the Committee of Council relating to . . . the management of the Tracadie Lazaretto," dated October 23, 1879, in *Journal of Assembly, 1880*, p. 87; Appendix, pp. 49-50.

¹¹⁰ See Lajat, *Le Lazaret de Tracadie*, pp. 273-278.

¹¹¹ *Annual Report, Massachusetts Department of Public Health, 1920*, p. 219.

Bedford. There they were locked in a box car and sent to the new Federal Leprosarium at Carville, Louisiana. Dr. Frank Parker optimistically told newsmen that the eleven men and two women would have a better opportunity of possibly being cured at Carville.¹¹²

Following the transfer of the inmates to Carville the Massachusetts Commissioner of Public Health was charged with disposing of Penikese Island. Well over \$100 was spent advertising the property but the bids received were so low in relation to the investment by the State that it was deemed impractical to accept them. No one was interested in buying the site of a former "leper colony." Thus the island was left in charge of a caretaker and, after three more years passed with no feasible offers of purchase, the property transferred to the Massachusetts Department of Conservation for use as a bird sanctuary.¹¹³

From its opening in 1905 to the closure in March of 1921, thirty-seven persons afflicted with leprosy were admitted to Penikese Island, including thirty-one males and six females. During the little more than fifteen year existence of the institution, the State of Massachusetts expended a total of \$378,329.21 on the Penikese Hospital. Thus each Massachusetts patient cost the Commonwealth an average of \$10,220 while each New Brunswick inmate cost the Province an average of \$67.00—the disparity creating the most notable difference between the two institutions.¹¹⁴

In both New Brunswick and Massachusetts, leprosy was one of the first diseases to successfully command complete tax supported institutional care for its victims at no cost whatsoever to them except their freedom. Any socialized health institution represents a compromise between what the patients want and what tradition or public policy makes available. In both the Province and the State, the absence of earlier models potentially allowed a modern departure for the care and treatment of leprosy, yet powerful tradition and stigma representative

¹¹² *New York Times*, March 11, 1921, p. 10.

¹¹³ *Annual Report, Massachusetts Department of Public Health, 1921*, p. 12.

¹¹⁴ *Annual Report, State Board of Charity, 1904-1919*, passim; *Annual Report of the Massachusetts Department of Public Health, 1920; 1921*, p. 49. According to F. L. Whitehead: "The last two cases from New Brunswick entered the hospital in 1937. Both were elderly people. One died three months after admission and the other in 1948. No new cases have been admitted since 1962, and there are none now. The last patient was discharged in 1965, which marks the end of an era of endemic leprosy in New Brunswick. The Leprosarium is closed, but the physical facilities still remain for general services of the Hotel-Dieu Hospital." See his article "Leprosy in New Brunswick: the end of an era," *Canadian Med., Assoc. J.*, 1967, 97: 1299-1300.

of the Middle Ages dictated the shape which the new institutions took. Even though Tracadie and Penikese were in operation during times of relative affluence, population expansion, rapid social change, and increasing social consciousness, their policies did not evolve, and their activities did not take on any new directions, in response to changes in the world around them. The plight of those living in the "leper colonies" was made all the more poignant by the unprecedented prosperity of other allied special groups such as the insane. Thus no weight was given to the wishes of the "lepers" and superstition and medievalism ran their course.

VII

In short, the incarceration of the "lepers" in New Brunswick and Massachusetts at two separated intervals of time, forcefully illustrates the extraordinary interaction between mass hysteria, Biblical precedent, reformist zeal, medical confusion, and community self-interest, along with the attitudes of the Provincial and State governments toward social policy during the respective periods. Created to protect society from "a fate worse than death," Tracadie and Penikese represent an attempt to require the implementation of the ancient Levitical code regarding leprosy; to allow mass denial of the existence of such a dreaded affliction; to accede to a scourge of punishment supposedly mandated by a higher law; and to guarantee the safety of the general populace from contagion. The New Brunswick action came during an era in which society was little concerned over the welfare of other helpless classes of society, whether they be women and children at long hours of hard labor, workers in the forests, fisheries, or the maritime trades. Tracadie offers the first instance of a Canadian institution designed to regulate completely the total lives of certain "able bodied and self sufficient" but contaminated members of society. Massachusetts, some sixty years later, despite the reforms of the much-heralded Progressive Era, reacted very much the same way. As such, an analysis of these two case studies suggests an almost unconscious social reaction to the age-old disease of leprosy.

THE FOLK PRACTICE OF GYNECOLOGY AND OBSTETRICS IN THE MIDDLE AGES*

LUCILLE B. PINTO

In order to discuss the practice of medicine in the Middle Ages, we must make a careful distinction between school and folk medicine, for in that time more than in almost any other they represent two basically different ways of dealing with the physical problems of existence. School medicine is—usually—scientific medicine, that is to say, practices, medications, and treatments are developed from a logical testing of observations and theories. Folk medicine is the practice of various techniques for the purpose of correcting physical ailments by a practitioner unschooled in medicine who works from experience and hearsay, and probably a native talent, without the *systematic* testing of any of the practices.

But in both cases there is an underlying working principle. School medicine begins with a theory about the cause of disease, and builds from that a system of medicine. Folk medicine follows very much the same course, but in place of a theory about the cause of disease, one finds a mythology, that is, an attempt to explain the mysteries of life. This introduces the element which we often call the superstitious aspect of folk medicine. In the Middle Ages this mythology was, of course, that of Christianity, including the classical Roman and Greek, Germanic, and Hebrew elements that had been incorporated.

Practitioners of this kind are usually found in rural areas where there is no access to professional medicine, and—in the Middle Ages—also in monasteries, where there could have been access to professional medicine, but very often was not. We know, for example, that before the prohibitions of the twelfth century, beginning with the Council of Rheims in 1131, against the practice of medicine by the clergy, that monks and nuns—Hildegard of Bingen, for example—ministered not only to their brothers and sisters but also served as court physicians, taught medicine,¹ and probably also provided medical care to the people of the countryside.

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¹ See David Riesman, *The Story of Medicine in the Middle Ages* (New York: Hoeber, 1935), pp. 21-22 for a brief account of the most famous.

In such a role the monasteries also served as the preservers and furtherers of medical tradition by storing, copying, and transmitting manuscripts. They did this not only for school medicine, but also for the folk medicine tradition. Thus we come to the focus of this discussion today—a unique manuscript from the end of the eleventh and the beginning of the twelfth century in which is preserved a fairly large amount of material on gynecology and obstetrics.

The basically Latin manuscript, Codex 803 of the Burgerbibliothek in Bern, Switzerland, is a rotulus 631 cm. long and an average 13 cm. wide, written on both sides in a variety of hands. Comprised of 16 pieces of parchment of varying length both glued together and fastened with scraps of parchment, the manuscript contains 1314 lines, 619 on the front side, 695 on the verso. Of these verso lines 296 are Latin to German glosses, alphabetically ordered, that serve partially as glosses to the text proper.² The text of the manuscript is of the most varied content, almost entirely medical. There are 221 recipes for medications or treatments for humans, one recipe completely in German, five sections on the medical uses of different plants—on the value of betony (betonica), caniculata (Ms: erchantilla), dracontium, cinquefoil (pentaphyllum), and hyssopus, six sections on the medical uses of different animals and their parts, including the vulture, the young of swallows, the badger, the male goat, wild boar, bull and hare—the latter is the most extensively mentioned—ten recipes for ailments of domestic animals, three methods of removing insects or snakes, one cosmetic recipe, and 28 magical items, incantations and amulets. If this seems to be a somewhat vague and disorganized listing of the contents, be assured that the contents themselves are just as disorganized. Imbedded in all this are 126 lines dealing with the specific physical problems of women and with childbirth. This seems at first glance like very little out of a thousand lines, but remember that it was written in a monastery.

The exact provenance of the manuscript has not yet been determined. It came to the Bern library in the manuscript collection of the Count of Mülinen, one of the leading families of that city. He, of course, like all eighteenth- and nineteenth-century collectors, kept no record of where he obtained it. The manuscript itself contains a notation that yields some information about its fairly recent history. In a hand of the seventeenth century in Latin: medical recipes (experi-

² Steinmeyer-Sievers, *Die Althochdeutschen Glossen* (Berlin, 1879-1898), Vol 3, MXII, MLIV.

menta medica) against various ailments, together with an alphabetical index of plants in Latin and German . . . ; given to Conrad Pfister, Professor in Basel, by Caspar Gruenewald, Diploma holder; from some Alsatian monastery.³ Conrad Pfister was Professor of Botany at the University of Basel from 1614 and librarian from 1622. In the latter position he founded the library and built up the collections—books and manuscripts—until his death in 1634. Gruenewald was a student there, and came originally from a small town in the Alsace, Gebwiler, in which the priests from the monastery of Murbach, a few miles distant, had a town house. One immediately conjectures that the manuscript originated there and at the dissolution of the monastery came into lay hands and thence to Gruenewald.

Professor Henzen of Bern also established on linguistic evidence that the manuscript was written in the Alsace.⁴ Murbach was the most illustrious monastery in that area, a center of learning and an influential scriptorium. If it was written as seems likely at Murbach, we must ask who used the gynecological material.

But before we discuss further the possible users of this manuscript let us examine the gynecological contents. When we turn to a consideration of birth and the physical structures and processes leading to it, we are dealing with the greatest mystery of life in the medieval view, and we should not be surprised to find an array of mythological elements, both openly expressed and subtly concealed. Let us examine some representative sections from the gynecological material of this manuscript, in which we find the interplay of pragmatism and mythology. These sections are found at the end of the article.

I

The first section deals with a common problem and is representative of the way in which recipes are placed together. They are short and precise—at this time one rarely finds the very long recipes of the late Middle Ages—and they provide all that the scribe has been able to collect on that topic. Since this manuscript was written over a long period, about 50 years, it does tend to repeat itself and in one section it even copies itself.

³ By comparison of this entry with Pfister's letters in the manuscript collection of the University of Basel, I have been able to establish that it is in his own hand.

⁴ "Der Rotulus von Mülinen" in *Geschichte, Deutung, Kritik*, ed. Maria Bindschedler and Paul Zinsli (Bern: Francke, 1969), passim.

The first proposed treatment is an early example of *Dreckapotheke*: "Let the woman drink the urine⁵ of a she-goat. It will call forth the menstrual period." It is not entirely excluded that the drinking of a repulsive substance could produce an internal upset that would provoke the flow, particularly if the woman were not pregnant. But at work here is also the sympathetic principle so common in medieval medicine. Urine flows and from seemingly the same place as menstrual blood, perhaps the urine of a female goat can induce the flow of blood. But with the goat we come to another level—the mythological one. The goat was a sacrificial animal in the cult of Artemis (Roman: Diana) and thus according to classical mythology was inhabited by a saving and healing spirit that could combat evil-causing demons. And Artemis was a protectress of women. The herb artemesia was named after her because of its efficacy in certain ailments of women, and in a circular way was then used against any ailments of women *because* it bore her name.

The sympathetic principle is at work too in the next suggestion. Hibiscus yields a slimy violet-red extract; whether it is also a purgative and hence likely to produce a suitable stimulus I have not been able to determine. The seeds of clover, however, the *clicon* of the next item, are a known purgative, and may have been efficacious under certain conditions.

This particular section is not part of an entire series on female ailments, but rather one portion of a series dealing with ailments of the stomach and abdomen. It may thus merely have been copied from another manuscript along with the sections that were of importance in the monastery.

II

The next recipe: against paralysis, and in birth, and to draw spearheads (or possibly infectious matter) from wounds, is one of a series dealing with poisons, worms, and epilepsy, that is, all ailments that were sometimes attributed to demonic possession and interference. Demons were a very important part of Eastern—Babylonian and Hebrew—folk medicine. To them was attributed especially interference in sexual matters and birth because of envy of humans—the Lilith

⁵ This is one of the terms contained in the Latin-German glossary at the end of the manuscript, as well as *clicon* below. Some of the Latin terms in this manuscript are found in none of the major dictionaries of Medieval Latin.

legend is an example of this. The juxtaposition in this recipe of three quite different problems makes it clear that there was thought to be an underlying common cause and that the same remedy—namely the exorcism of the demon—would be useful in all. In the part dealing with birth the instruction to *place* the herb on the genitals makes it clear that it is not a matter of medication. The plant *vizwurz*, modern German *Weisswurz*, is Solomon's Seal (*polygonatum vulgare*), also known in German as Solomon's Seal (*Salomonssiegel*). Its berries are supposedly an emetic, but here the green plant is used. Also the plant is used in folk medicine against epilepsy, which is invariably attributed to demonic causes, because the name implies the Seal of Solomon which according to Josephus was used in exorcising demons.⁶ In medieval Latin paralysis is a very general term covering a number of ailments and the drinking of a concoction made with Solomon's Seal may well have helped.

III

The next recipe proposes a means of determining sterility that has an extremely long tradition. "In order to know whether the man or woman is sterile. They should urinate at night each in a separate container, and in each [container] their own skin scrapings should be macerated and that one is sterile in whose container worms grow."

In a slightly different version it is found in Papyrus Carlsberg No VII (19th-20th dynasty). From Eric Iversen's reading: "You shall put something (most probably the women's excrements) [the parenthetical remark is Iversen's] in bags of cloth together with sand from the beach. The woman shall pass her water upon the bags every day, they being filled with . . . and dates. If they produce worms, and . . . she will not give birth. If they do not produce worms that which she shall bear shall live."⁷

No Greek version that could have been the model for the medieval two-pot technique has been found, but the version as the Rotulus has it was known throughout the Middle Ages—being found even in Albertus Magnus, in *Libellus de formatione hominis*. As late as 1699 it is found in Franz Paullini's *Neu Vermehrte heilsame Dreckapotheke* (Frank-

⁶ Max Höfler, *Volksmedizinische Organotherapie und ihr Verhältnis zum Kultopfer* (Berlin, n.d.), p. 95.

⁷ *Papyrus Carlsberg No. VII* (Copenhagen: Munksgaard, 1939), p. 11.

furt).⁸ It would seem to be a test to reveal the presence of a life-destroying demon, there is a clear link between demons and worms—the worm being in this magical medicine a kind of arch-demon of illness—that I do not have the time to establish here. Demonic possession would be revealed in the body tissues and excrements by the growth of worms. I have no corroborative evidence from other sources, however, and the presence of the prescription in Albertus Magnus is evidence of the widespread confidence in the truth of it. Certainly the technique can have no validity although there might well be generation of parasites from the skin scrapings. In this case the prescription could well be very harmful. Think of the marital tensions when one spouse blamed the other because in his or her jar there were worms!

It is followed in the manuscript by a section on determination of sex. Soranus' idea that a male was carried on the right side and a female on the left is shown in the statement: "If the right breast is larger than the left, she is carrying a male." If the expectant mother is rosy-cheeked she is carrying a male; if pale-cheeked a female. It is also said that if a pregnant woman is offered a lily and a rose, she will choose the lily first if she is bearing a male, the rose if a female (11. 484-88). In medieval literature the rose is also often the symbol for the female. One finds it difficult to understand how the superstition persisted—it is widespread, occurs in almost all European folk traditions—and presumably any potential user knew about it. Perhaps she believed to be able to influence the sex by her choice.

IV

The next item is included as an example of a purely magical text—an amulet for establishing the truth. It represents a peculiar perversion of an old Christian saints legend—that of the seven sleepers. Seven young Christian men in the very early days of Christianity in Rome escaped to the hills and hid in a cave to avoid persecution. They fell asleep, the cave was walled up. After sleeping for 400 years they awoke, went into town because they were now hungry. When they tried to purchase food with their ancient coins they were captured and brought under suspicion to the emperor. He was not a Christian, was still persecuting them, but was converted by their tale, which he believed. So Rome was freed from persecution and the seven sleepers were celebrated. The

⁸ *Loc. cit.*

legend captured the imagination of the Germanic tribes and was very widespread.

The sleepers tell the truth of the sleeper and those she has slept with. For the medieval practitioner truth was truth, whether the abstract truth of religious belief, or the hard truth of the physical fact. It is part of an entire section beginning with the test for sterility, in which all the items are magical in nature. Even the first one we saw reflects the possible presence of demons, and the last four (of which you do not have an example) are all charms for stopping an excessive flow of blood. Here the belief in the power of the word outweighs any practical consideration.

V

The next one, to reduce painful swelling of the breasts, uses the principle of the conservation of energy—spiritual energy, that is—for such was thought to be present also in the excrements. Hence, the application of an ointment of feces in urine, mixed with rain water, is efficacious. To the modern mind there is a curious paradox in a concern for the purity of the water to be mixed with the excrements, but if we regard it as an exercise in spiritual power—which they did—we see that no possible outside demonic contamination can be allowed.

Up to this point there has been a haphazardness in the material; that is also true of the material from the first side that we have not specifically discussed, but when we turn to the verso of the manuscript we find a certain rigor, a certain attempt at completeness. First there is a long connected (151 lines) section, classically arranged beginning with ailments of the head and going to the feet. Then a variety of recipes, and finally a long connected section (42 lines) on the ailments of women and the problems of childbirth, in which the greatest attention is given to expelling a dead fetus.

VI

In this section, where we would expect to find greatest evidence of demonic influence, we find only pragmatic and sympathetic measures suggested: pennyroyal (*pulegu*, i.e., *mentha pulegium* L.), poppy extract and seeds, human milk (the sympathetic principle, a woman who has already given birth can perhaps influence this birth), artemesia of which we have already spoken.

Nor is there any magical material in the other measures. Since the section is so lengthy, we can be reasonably sure that its inclusion was deliberate, that is, it was not merely an isolated recipe copied along with other material whether the scribe found it useful or not. I believe that it was intended for use and perhaps the monks instructed the midwives, or even made the manuscript available to them. We will come back to this point later.

VII

The last section we shall discuss in detail is taken from a long section on the value of the organs of the hare against ailments. Animal medications were extensively used in the Middle Ages, and some of them were still officially used well into the modern period. This part deals with fertility—or the lack thereof—and shows the clear cultic nature of such animal medications. Not because the hare itself was particularly fertile was it thought to be useful in sexual matters, but because of its association with fertility gods, among the Greeks in the Dionysian cult, as well as among the Germanic tribes.

The hare is proscribed in the Old Testament (Lev. XI-6); on the other hand Pliny says all parts of it are of tremendous use to women (XXVIII, 77). By 755 its use as an aphrodisiac was so widespread that it was forbidden by the Pope.⁹ But its easy accessibility assured its continued use.

In this example it is intended mostly to insure the conception of a son, but it seems also to be thought of as a contraceptive. The wording (and the concept) of the first two items is a little curious. "Put dried and powdered hare's womb in a potion, and if the woman and man drink at the same time she will conceive. If she drinks alone she will conceive neither a male nor a female." The heading *Ad conceptum* could mean either "to insure conception" or "against conception." If the latter, then perhaps the presence of the blood from the hare's womb was thought of as a conceptual fruitfulness that hindered a real fruitfulness.

Such manuscripts provide the only information about medieval gynecological practices. Soranus' influence was not great in the Middle Ages although there are some fragments preserved; under the impact of Galen he was largely forgotten. It is primarily the influence of Christianity, however, and its obsession with sex and sexual matters

⁹ Hofler, *op. cit.* (n. 6 above), p. 58.

that is most responsible for this situation. Male physicians could not treat women in these intimate matters, thus it passed into the hands of midwives, who were undoubtedly often very skillful but not encouraged to gain theoretical knowledge. Then there is the other class distinction: obstetrics belonged to surgery, surgeons were looked down upon by school physicians. Thus there remained no home for these crucial matters other than with midwives.

In German the word for midwife is attested to from the ninth century on, and in two texts of the twelfth or thirteenth century there is mention of seizing (*greifen*) in birth suggesting manual help at birth,¹⁰ but the real history of midwifery only begins to be written in the fourteenth century.

Bern Codex 803 contains the most material of this kind among the early manuscripts and, certainly in Germany, the only early example of any extensive writing on the subject. I remind you of the form of the manuscript, a scroll $20 \frac{2}{3}$ feet long, extremely cumbersome to use. In the late Middle Ages physicians used a rolled parchment because it was easy to carry, but they were short pieces. From experience I know that it takes considerable time to roll a 20-foot piece of parchment in order to reach the recipes at the end. So one must ask the purpose. There are many other rolls: the necrological rolls, the governmental rolls of England, the play-script rolls, rolls hung before congregations that they might have solace from the prayers thereon. But none of these purposes relates to the Mülinen Rotulus. There is a small group of late medieval English rolls that contain protective prayers. They are all about 180 cm. long, that is, supposedly the length of Christ's body, and hence were thought to be efficacious in warding off physical harm.¹¹ One of these, Wellcome Ms 632, was used as a birth girdle.

This suggests the possibility that the Mülinen roll by virtue of its form was thought to have a certain protective power. The large amount of magic in the manuscript offers some support for this possibility.

In my opinion, however, the form of the rotulus had a purely pragmatic origin and purpose. Parchment was precious and the pieces used in the roll are irregularly shaped and unevenly finished. It was probably easier and more economical to glue them together than to cut them to regular book shape. And thus it continued to grow longer. It is somewhat carelessly written and has no ornamentation. The manuscript

¹⁰ Heinrich Fasbender, *Geschichte der Geburtshilfe* (Jena, 1906), p. 78.

¹¹ See Curt F. Bühler, "Prayers and charms in middle English scrolls," *Speculum*, 1964, 39: 270-78.

is greatly worn and must have been read a great deal. All this suggests that it was a working manuscript, and not merely documentation. I think it hung on the wall of the infirmary, turnable by means of a wooden dowel, supported perhaps at the bottom so that one could read it while turning. I believe the monks collected the material in it systematically and deliberately to aid themselves *and* the lands people of their area, made it available to them, and in the case of the gynecological material perhaps even instructed the midwives in its contents.

We in our twentieth-century wisdom may find it superstitious only, but they in their twelfth-century deep Christian belief, and their ability to find the commonalty in seemingly diverse things—for example, in Christianity and the remnants of Greek, Roman, and Germanic religions that had come to them—worked with the resources at hand to find a practical solution to the physical problems of birth and a spiritual response to the tremendous mystery they perceived in it, and to combine them in a useful way.

Excerpts from Codex 803, Burgerbibliothek, Bern, Switzerland;
11th/12th Century

- I *Ad menstrum provocanda.*
Locium caprae mulier bibat. menstrua prouocat. Item. Hibiscum in aqua coctum si mulier bibat, menstrua prouocat. Item. Clicon decoque in aqua et da bibere menstrua prouocat. Similiter fetus pregnantibus discutit. et sedatas matribus deducit. (11. 94-98)
- II *Contra paralysin. et ad partum mulieris. et ad spicula a uulnere retrabenda.*
Viz wrz que inter scopulos nascitur. cum ferramentis diligenter eruta. arefacta. trita. et cum uino cyatis .iiibus. sumpta. paralysin mire sanat. Si autem herbam uiridem colligis et tundis. mulieribus in partu laborantibus. genitalibus apposita. statim parturit. etiam fetus ex matricibus mortuos educit. Similiter quoque si uulneribus superponitur. . . . (11. 347-53)
- III *Vt scia utrum uir an mulier sterilis sit.*
Nocte in singulis uasculis urinam faciant. et in ea separatim furfures macerentur et de cuius uase uermes creuerunt sterilis est. (11. 481-83)
- IV *Vt mulier dormiens interroganti verum dicat de adulterio.*
Aiohel. Deomedius. Eugenius. Probatas. Sabatus. Stephanus. Quiriacus. Hec nomina scripta in carta uirginea. inter mamillas pone dormienti. omnes adulteros nominat. (11. 488-92)
- V *Ad mammas a partu tumentes.*
Fimum in urinum cum aqua pluuiiale tritum illinito. tumorem sedat. (11. 492-93)
- VI *Si mulier puer in utero moritur.*
Pulegu uiticis manipulos tres cum ueteri uino tere. et da bibere. Item. Carta papaueris cum semine suo pone et eum mulier liberata fuerit mox tolle. Item. lacasine cum aqua salsa ana in potu da statim liberatur. . . . Item. si tarda uerit parere aut mortuum in utero hauerit lac mulieris cum oleo bibat statim parit. . . . Item ut cito pariat et secunda sequatur. artemesiam in sinistro latera liga. et cum pepererit omni festinatione eam tolle. . . . (11. 896-912)
- VII *Mulier ut masculum pariat.* Leporis uulus fide sicata et erasa in pocione e efficit. et si mulier et masculus simul biberint nascetur. si enim sola mulier biberit nec masculum nec feminam concipiet. *Ad conceptum.* Lepus indicitur et sanguis quia uulua fundit datur inliniat sibi naturam de coagulo eius. *Si uolerit masculum partu.* Leporis testiculum post purgationem suam mulier cum uino transuoret masculum concipiet. *Vt mulier pariat masculum.* Leporis coagulum datur obolis duobus uiro. femina autem quadruplo debet bibere. debet autem esse coagulum de lepore masculo. . . . (11.1002-14)

NOTES AND COMMENTS

CARDIAC CATHETERIZATION A HISTORICAL NOTE

N. HOWARD-JONES

In the *Lancet* of 30 April 1949 there was a historical note on cardiac catheterization by A. J. Benatt.¹ The author summarized the work of Werner Forssman (1929)² and André Frédéric Cournand (1941),³ for which they shared in 1956, with Dickinson Woodruff Richards, the Nobel Prize for Physiology and Medicine, "for their discoveries concerning heart catheterization and pathological changes in the circulatory system."⁴ Benatt suggested that Fritz Bleichröder may have had a catheter passed into his heart in 1905, thus anticipating Forssman by 24 years. Benatt based his suggestion on a statement in 1929 by Forssman himself⁵ that his attention had been drawn by Professor E. Unger to three short communications published by Bleichröder, Unger, and Löb in 1912 on "intraarterial therapy."⁶ These described the insertion of ureteric catheters into the larger vessels—both veins and arteries—in humans, with a view to subjecting particular organs to the influence of high concentrations of medicaments. In his communication, Bleichröder explained the seven years' delay in the publication of his experiments on the ground that they had no practical significance at the time that they were made, but that this situation had changed with recent progress in chemotherapy, especially of carcinoma(!). According to Forssman, Unger had stated to him 17 years later that he had passed a catheter into the arm veins of Bleichröder and three other human subjects up to the axilla.

He has even [continued Forssman], in the case of Dr. Bleichröder, as he concluded from the length of the catheter and a stabbing pain, reached the right heart. The authors abstained at that time from the publication of this last fact.

¹ A. J. Benatt, *Lancet*, 1949, 1 746-47.

² W. Forssman, *Klin. Wschr.*, 1929: 8, 208.

³ A. Cournand, & H. A. Ranges, *Proc. Soc. exp. Biol.* 1941. 46, 462-466.

⁴ T. L. Sourkes, *Nobel Prize Winners in Medicine and Physiology 1901-1965* (New York: Abelard-Schuman, 1966).

⁵ W. Forssman, *Klin. Wschr.*, 1929, 8 2287.

⁶ F. Bleichröder, E. Unger, & W. Löb, *Berl klin Wschr.*, 1912, 49 1503-1505.

In their 1912 publications, Bleichröder, Unger, and Löb certainly showed that catheters could be passed into the large vessels of living human subjects with impunity. But if Unger on one occasion reached Bleichröder's right heart, this would seem to have been done more or less accidentally and it was evidently considered to be an observation of too little significance to warrant publication.

No writers on cardiac catheterization mention that a report of the passage of an elastic catheter into the left heart of a living human subject was published as early as 1832 by the eminent Prussian surgeon, Johann Friedrich Dieffenbach (1792-1847).⁷ The subject was a patient dying of cholera, and Dieffenbach describes his intervention as follows (p. 100).

In an almost dying [cholera] patient suffering from great anxiety and breathlessness I opened, with the agreement of Herr Medical Counsellor Casper, the brachial artery in its upper third. As not a drop of blood flowed, I introduced, as I had planned, an elastic catheter into the vessel approximately as far as the heart. Nevertheless no blood appeared through the catheter. The heartbeat became clearer and more rapid, and I now withdrew the catheter. It was completely empty and no drop of blood had entered it, as must have happened if fluid blood had been present in the heart . . . [mentions that the patient had a vesico-rectal fistula as a result of a previous lithotomy]. It is greatly to be regretted that this operation of interest for all physiology was performed on a man who was so near to death and who shortly afterwards was seized by convulsions and rendered his soul.

At this period, the medical profession was obsessed by the notion that in cholera there was a centripetal movement of the blood, which resulted in emptying of the peripheral vessels and overloading of the heart, the real explanation being, of course, that dehydration was so severe as to deplete the peripheral circulation and cause thickening and clotting of the blood in the heart and great vessels. Because of this fallacy, bleeding was practised even in pulseless patients, and if no blood could be obtained by venesection an artery would be opened. A contemporary British medical editor described bloodletting in cholera as comparable to pouring a small amount from a bottle in order to shake up the contents.⁸ Dieffenbach himself, in an introduction to a reprint of his paper two years later,⁹ disclaimed any intention of experimenting on human beings and asserted that his intervention was

⁷ J. F. Dieffenbach, *Cholera-Archiv*, 1832, 1: 86-105.

⁸ [J. Johnson,], *Med.-chirurg. Rev.*, 1832, 16: 210.

⁹ J. F. Dieffenbach, *Physiologisch-chirurgische Beobachtungen bei Cholera-Kranken* 2d. ed. (Güstrow, 1834), p. iv.

performed only on the insistence of the doctors of the cholera hospital that it was therapeutically indispensable to remove blood. Earlier experiments on animals had, he says, taught him that the introduction of foreign bodies into the large vessels and the heart "was tolerated in a wonderful way." It was already known, he adds, that the external surface of the heart possessed a certain degree of insensibility to mechanical stimuli "but that this was also the case to a certain extent with its interior walls was not." Dieffenbach, who had previously performed experimental blood transfusions on animals, also performed intravenous transfusions of blood on cholera patients, stressing that animal blood was dangerous to human life and that only human blood should be used. Before a transfusion he would try to remove some of the patient's blood, to avoid overburdening the heart. Here was no idea of rehydration, but rather of replacing bad blood by good.

For his "physiological-surgical observations in cholera patients" Dieffenbach was awarded the Montyon prize of the Paris Academy of Sciences. While his treatment of cholera will hardly excite emulation today, he must be credited with a very early demonstration, probably the first, that laboratory animals tolerated well the introduction of foreign bodies into the heart.

MEDICO-HISTORICAL NEWS AND ACTIVITIES

CORRESPONDENCE AND REPORTS

THE NEW DIRECTOR OF THE WELLCOME INSTITUTE OF THE HISTORY OF MEDICINE

In saluting Edwin Clarke, M.D., F.R.C.P., on the occasion of his appointment as Director of the Wellcome Institute of the History of Medicine in London, medical historians on this side of the Atlantic speak of a colleague they have all recognized for some years and many have known well. Dr. Clarke, a native of Felling on Tyne, County Durham, attended the Medical School of King's College, University of Durham, at a time when about seventy British medical students were selected to complete their studies in North American universities during World War II. He therefore holds not only the M.B., B.S. of Durham but also the M.D. of the University of Chicago. (His Durham M.D., of eight years later, has the usual meaning of the degree in Great Britain, where the doctorate follows postgraduate work.) Back in Britain for fourteen years, Dr. Clarke then returned for a time to the U.S.A. His postwar studies in America were directed to medical history. For a few months in 1960 he worked with the late Professor C. D. O'Malley at U.C.L.A., and then, from 1960 to 1962, he was successively Fellow, Instructor and Assistant Professor at the Johns Hopkins Institute of the History of Medicine, under Professor Owsei Temkin. During 1962-63 he was Visiting Associate Professor of the History of Medicine at Yale, from 1963 to 1966 Medical Historian to the Wellcome Historical Medical Museum and Library, and from 1966 to 1972 Senior Lecturer in the History of Medicine and Director of the Sub-Department of the History of Medicine, Faculty of Medical Sciences, University College, London. In 1972 he was made Reader in the History of Medicine in the University of London.

This rapid review of Clarke's *curriculum vitae* has missed the important interval of a dozen years, beginning in 1946, when he was house surgeon to Professor Sir Hugh Cairns at the Radcliffe Infirmary, Oxford, and extending to the period, 1951-58, when he had various appointments at the Royal Postgraduate Medical School of London, leading ultimately to Lecturer in Neurology and Consultant Neurologist in the Department of Medicine under Professor Sir John McMichael. Subsequently, in 1958-59, he was Assistant Scientific Secretary of the Wellcome Trust.

Although physiology, pathology and several other medical disciplines, medical journalism not excluded, have contributed to the number of professional medical historians, while some have embraced the study of medical history immediately after their work as house officers and some have entered the field from outside medicine, Dr. Clarke is one of the very few—if, indeed, he is not in this respect

unique—who have entered this arduous and enchanting field with full qualifications in a clinical specialty. He was named F.R.C.P. in 1970.

Clarke's publications are essentially of two kinds—the neurological ("Cervical Myelopathy," for example, in *Neurology* and in *Brain*) and the medical historical ("Practical Medical History," in *Proc. Roy. Soc. Med.*). Very often, however, they are both neurological and medical historical—"Aristotelian Concepts of the Form and Function of the Brain," *Bull. Hist. Med.*, 1963, and "The Doctrine of the Hollow Nerve in the 17th and 18th Centuries," in *Medicine, Science, and Culture: Historical Essays in Honor of Owsei Temkin*, 1968. It was in 1968, too, that he published, with the late Professor C. D. O'Malley, *The Human Brain and Spinal Cord: A Historical Study Illustrated by Writings from Antiquity to the Twentieth Century*. In 1971 Clarke edited the very interesting and useful *Modern Methods in the History of Medicine*. The *Dictionary of Scientific Biography* has asked him for biographies of nearly twenty eminent contributors to the neurosciences, and some of these have already appeared. At the end of 1972, with Dr. Kenneth Dewhurst, he published *An Illustrated History of Brain Function*.

The Director of the Wellcome Institute should be scholar, administrator and editor, in addition to being teacher and author. In some of these capacities largely, in others minimally as yet, Edwin Clarke has demonstrated his training and competence. A large field is now his to survey and to till. He enters it with the hearty good wishes of his colleagues on both sides of the Atlantic.

Lloyd G. Stevenson

ANNOUNCEMENTS

NATIONAL NEWS

Cleveland

The Howard Dittrick Museum of Historical Medicine of the Cleveland Medical Library Association received a bequest of \$10,000 from the late Dr. Robert M. Stecher of Lakewood, Ohio. Dr. Stecher's past gifts of books to the Cleveland Library included 165 volumes by and about Sigmund Freud, important works on the history of genetics, and recently his widow, Mrs. Florence Stecher, presented his Darwin collection of books and letters.

Josiah Macy, Jr. Foundation

The Foundation announces new grants totaling \$360,200. Among these is an award of \$170,000 to the Cornell University Medical College to support new programs and the expansion of existing programs in the history of medicine at the New York Hospital-Cornell Medical Center, including a cooperative endeavor with Cornell University-Ithaca to develop a combined training program in the history of medicine and science. In addition \$250,000 has been allocated for the conduct of eight Macy conferences. One of these will be devoted to the history of medicine and the biological sciences and will take place March 17-19, 1974, in Princeton, N.J.

National Library of Medicine

"The Artist and Medicine," an exhibit of prints and drawings, will be on display at the National Library of Medicine, October 15, 1973–February 25, 1974. The forty works in the exhibit, dating from 1494 to the present, were chosen from the Prints and Photographs Collection of the Library's History of Medicine Division. Included are important works by Dürer, Hogarth, Daumier, Bellows, and Kollwitz. An illustrated catalog of the exhibit is available and can be obtained from the Library's Office of Public Information, 8600 Rockville Pike, Bethesda, Md. 20014.

San Francisco

The History Collection of the Library of the University of California, San Francisco, has received a gift of Greco-Roman surgical instruments from the San Francisco Foundation of Otology. The collection of eighty-three otological and related instruments will supplement the Egyptian surgical instruments of the Library's Reitz collection. The instruments will be exhibited to the UCSF campus community and to health science specialists and others interested in the history of artifacts.

Washington, D.C.

On October 26, 1973, an all-day symposium was held at the Saint Elizabeths Hospital, National Institute of Mental Health, to commemorate Dr. William Alanson White. Distinguished participants presented and discussed the work of Dr. White, one of the early American pioneers in psychoanalysis, who was Superintendent of Saint Elizabeths from 1903 to 1937. An exhibit coordinated with the symposium was opened on the same day at the American Psychiatric Association Museum in Washington.

PROGRAMS OF MEETINGS

College of Physicians of Philadelphia, Section on Medical History

September 24, 1973: "A. C. Barnes, M.D. vs. J. F. Schamberg, M.D.: a Chemotherapeutic Confrontation," Ira Leo Schamberg; "Medical Executive and Medical Organization: an Historical View," Richard M. Nelson.

George W. Corner History of Medicine Society, Rochester, N.Y.

September 26, 1973: "A Short History of Physical Examination: From Observation to Invasion," Edward C. Atwater.

October 3, 1973: "The Evolution of the Clinical Clerkship, 1820-1970, with Some Notice of Student Behavior during That Time," Edward C. Atwater.

October 18, 1973: "Rochester Goitre and Its Treatment with Water," Lawrence A. Kohn."

Handerson Medical History Society, Cleveland, Ohio

October 3, 1973: "The Malpractice Case of Lewis A. Sayre, M.D.," Robert R. Crawford.

Mayo Foundation History of Medicine Society, Rochester, Minn.

October 10, 1973: "Medicine of John Wesley, 1703-1791," C. Wayne Callaway; "Folk Medicine in Ancient Rome," C. Wilbur Rucker.

University of Virginia Medical History Society, Charlottesville, Va.

September 26, 1973: "The Evolution of Cupping Instruments, a Contribution to the History of Bloodletting," Doris Leckie.

October 24, 1973: "The Changing Image of the American Physician," John Duffy.

Washington Society for the History of Medicine, Washington, D.C.

September 18, 1973: "Karl Landsteiner and the Purpose of Immunity: the Interpretation of the Human Isoantibodies," Pauline M. H. Mazumdar; "The Search for the Chemical Structure of DNA," Jack S. Cohen.

William Snow Miller Medical History Seminar, University of Wisconsin—Madison

October 3, 1973: "The Changing Image of the American Physician: the Last Two Centuries," Gert H. Brieger.

NEWS FROM ABROAD

Belgium

The seventh Benelux Kongres voor de Geschiedenis der Wetenschappen is being held in Ghent, October 19-21, 1973. The congress is sponsored by societies of the history of science and medicine from Belgium, Luxembourg, and the Netherlands.

London

Dr. William F. Bynum has been appointed lecturer in the History of Medicine and Head of the Sub-Department of the History of Medicine in University College London. He will take up this post on 1 October 1973, replacing Dr. Edwin Clarke, who assumes the Directorship of the Wellcome Institute of the History of Medicine on that day. Dr. Bynum obtained his M.D. from the Yale University School of Medicine in 1969, having spent the academic year 1966-67 studying with Professor Erwin H. Ackerknecht at the Institute of Medical History, University of Zürich. After an intership at the Georgetown University Hospital in Washington, D.C., he went to King's College, Cambridge, on a Josiah Macy, Jr. Foundation post-doctoral fellowship in the history of the bio-medical sciences. His Cambridge Ph.D. thesis is concerned with a study of human biology in the first half of the 19th century.

TERMINATION OF HISTORY OF LIFE SCIENCES STUDY SECTION
CONTINUATION OF GRANTS

The Division of Research Grants of the National Institutes of Health, citing insufficient workload, did not renew the charter of the History of Life Sciences Study Section for the 1973-74 fiscal year; therefore, the existence of the Study Section terminated as of June 1973. This decision was made at a time that the peer review system was being critically examined throughout the Federal establishment. A protest on the part of the members of the History of Life Study Section did not avert the decision, although it brought the indication that, should the number of applications in the field grow to a point at which the panel could again be justified, the Division of Research Grants would consider reconstituting the Study Section. Scholars in the history of the biomedical sciences need to be informed that *the abolition of the History of Life Sciences Study Section does not mean the termination of research funds in this field of scholarship*. The National Library of Medicine continues to award research grants in the history of the life sciences, and applications continue to be evaluated by the peer review system through *ad hoc* meetings of a Special Study Section of the Division of Research Grants. Scholars interested in securing information about the eligibility of biomedical history projects or application forms should write to: Ileen E. Stewart, Executive Secretary, Division of Research Grants, National Institutes of Health, Bethesda, Maryland 20014; or to Dr. Jeanne Brand, Extramural Programs, National Library of Medicine, Bethesda, Maryland 20014.

BOOK REVIEWS

Macfarlane Burnet. *Walter and Eliza Hall Institute, 1915-1965*. Melbourne University Press, 1971. ix + 193 pp. Ill. \$9.50. (Distributed in the U.S. by International Scholarly Book Services, Portland, Ore.)

The years that roughly spanned the second quarter of this century were for virology what the last quarter of the 19th century was for bacteriology—a time of glorious excitement when every week it seemed brought new discoveries and better understanding of old ones. Mac Burnet and inevitably the Walter and Eliza Hall Institute in Melbourne were in the forefront of these developments. The man and his colleagues had unmistakable marks of quality.

The Institute was small, geographically remote, committed to limited objectives only, freed from burdensome administrative problems but yet not standing alone. It must have been a happy place; certainly it was a productive one. Its history is written by the person who knows it best; he also writes lucidly, as many scientists have long known. Sir MacFarlane Burnet has in less than 200 pages given us a model history. The book is divided into about two equal parts, the first describing the evolution of the Institute and its principal personages; the second the investigations that made the Walter and Eliza Hall Institute world-renowned, and more important placed an indelible stamp on medical research in Australia. The Institute was the creation of three men, Walter Hall who accumulated the money, R. G. Casey, man of affairs who persuaded Hall's widow to establish a charitable trust for medical research, and Sir Harry Allen, pathologist and long-time dean of the Melbourne medical school. The Institute was established in 1915, but due to World War I was not launched till 1920. S. W. Patterson, the first director, had done creditable research in physiology, and later became an accomplished internist. Most of the investigations during the three years of his directorship were clinically oriented.

He was succeeded by C. H. Kellaway who quickly placed his own mark on the Institute which he headed from 1923 until going to London in 1944 as the director of the Wellcome Research Institution. A native Australian, trained in physiology in London, Kellaway soon established research as a respectable full-time activity in Australia. He headed a division of physiology and pharmacology, and brought in a succession of bright young men and women, among whom were Burnet, N. H. Fairley who later became professor of tropical medicine in the University of London, and G. R. Cameron, later to become professor of pathology in University College Hospital Medical School in London. Burnet became assistant director of the Institute in 1933 and director in 1944. It was he, working in the relatively virgin field of viruses, who became one of the best known Australian scientists, winning the Nobel Prize (with Medawar) for Physiology or Medicine in 1960.

Burnet's first trip to America to give the Dunham lectures at Harvard in 1943-44 coincided with his appointment as the third director of the Institute. Already well

known for his work on influenza virus, this was in the nature of a triumphal trip to the major virus research laboratories of the western world. The journey, fully described in his autobiography, served to broaden Burnet's outlook and set the stage for his evolving view of the Institute as a center for fundamental research instead of one rather sharply disease oriented. The Institute largely through the influence of Burnet and his immediate associates shifted its major emphasis from virology to immunology. In 1965, one of Burnet's students, G. J. V. Nossal, succeeded to the directorship of the Institute.

Part Two, entitled *The Harvest of Research*, is devoted to a summary of the scientific work of the Institute from its founding to 1965. Covered are the investigations on poisons, especially the "Bundaberg tragedy" due to staphylococcus toxin; virus diseases including psittacosis, influenza, Q-fever, vaccinia, herpes, poliomyelitis, and myxomatosis; clinical research with particular reference to gastroenterology, alcoholism, and autoimmune disease; and finally immunity. There are useful lists of persons connected with the Institute, references to biographical and other sketches bearing on the Institute and to its principal scientific publications, and a good index.

Reviewed by THOMAS B. TURNER, M.D., Professor Emeritus of Microbiology and Dean Emeritus of the Medical Faculty, The Johns Hopkins University, Baltimore, Md.

Macfarlane Burnet. *Changing Patterns; an Atypical Autobiography*. New York: American Elsevier Publishing Company, 1969. 282 pp. Ill. \$8.50.

For those who like their history served up hot, the developments in molecular biology and especially virology are claiming increasing attention. Here, in the usual clear, simple, yet elegant style of Sir Macfarlane Burnet, is one of the most effective autobiographies I have had the pleasure of reading. It is atypical because he says relatively little about himself, aiming instead "... to give an account of the way in which scientific aspects of medicine have changed, how the approach to biological research has been modified, and how new concepts of human biology have emerged during my professional lifetime." His theme, says Burnet, is change—change in knowledge, change in medicine and science, and change in the overall impact on man and nature.

I have long been an unabashed admirer of Burnet, so his most recent book could hardly receive less than a glowing review. I know little in detail about his clonal selection theory of immunity or his other scientific work as an early virologist and microbiologist. In 1960, with Sir Peter Medawar, Burnet shared the Nobel Prize for their work on acquired immunological tolerance.

Not only has Burnet made significant biological contributions, but he, like René Dubos and only a few other leading scientists, has taken time to instruct those of us who are non-experts. In *The Integrity of the Body* and *Self and Non-Self*, both

available in paperback editions, Burnet explains immunology. But my favorite has always been an earlier book, now in its third edition, *Natural History of Infectious Disease*. Only a man with a real and very broad understanding and the superb gift of clear communication could produce such a book. Of a different nature but similar caliber is *Changing Patterns*. Here, Burnet describes the currents of the changing times in a career beginning at the Melbourne Hospital in 1919, through the directorship of the Walter and Eliza Hall Institute until his retirement in 1965.

He continues to be the spokesman for science in Australia and even more importantly, he continues to ask the important questions. He is concerned with the impact of medical genetics and the genetic future of man, as well as with our changing environment. The great research tasks of the future, Burnet says in his final chapter, "... will grow out of the intermingling and cross-fertilization of the social, medical, and biological sciences."

We have here, then, an important book in which one of the most thoughtful scientists of the twentieth century beautifully expresses his concerns and his doubts, as well as his own achievements and those of the various aspects of science to which he has contributed so greatly. *Changing Patterns* will prove to be an important source for those historians interested in medical science of this century, a time in which we witness the key phenomenon of the coming together of medicine and biology in a way only slightly reminiscent of the natural history alliance to medicine in the past. It will be our task now to more fully assess the changing patterns.

Reviewed by GERT H. BRIEGER, M.D., M.P.H., Ph.D., Associate Professor of Medical History, Duke University Medical Center, Durham, N.C.

Sepp Domandl. *Erziehung und Menschenbild bei Paracelsus. Anfänge einer verantwortungsbewussten Pädagogik*. Vienna: Notring-Verlag, 1970. xiii + 144 pp. Ill. öS. 110.

Ferdinand Weinhandl. *Paracelsus-Studien*: herausgegeben von Sepp Domandl. Vienna: Notring-Verlag, 1970. 133 pp. Ill. öS. 120.

Although not primarily aimed at the historian of medicine, these two volumes represent significant contributions to our understanding of the Paracelsian corpus.

Paracelsus-Studien is a collection of five essays published earlier by Ferdinand Weinhandl who served successively as Professor of Philosophy at Kiel, Frankfurt, and Graz. Interested originally in 18th-century German philosophy, Weinhandl's studies of sixteenth-century texts stem from his investigation of the background to Goethe's thought. His interest in symbolism may be related not only to his research on Paracelsus, but also to his important study of traditional alchemy that was appended to a new edition of the *Chymisches Lustgärtlein* (1624) of Stoltzius von Stoltzenberg (Darmstadt, 1964).

Among the essays printed in the present volume one might single out for special attention Weinhandl's "Die Philosophie des Paracelsus," a scarce work in its original printing since it was published in 1943 on fragile war paper in the series, "Die bunten Hefte für unsere Soldaten." Here Weinhandl concerned himself with outlining the philosophical views of Paracelsus as a whole. Special emphasis is given to religious motivation and the significance of created Nature. Weinhandl notes that in this context man must learn to seek out and "read" not only the outer, but also the inner signs which are present in all things if he is to properly understand the "Book of Nature." For this reason he rightly points to the Doctrine of Signatures as a key to the understanding of Paracelsus' approach to Nature. However, he is aware that for Paracelsus any true interpretation of Nature implied the gift of divine illumination through the light of nature.

Weinhandl argues that the alchemical interests of Paracelsus go far beyond pharmaceutical discoveries that would limit him to being classed as a precursor of modern chemotherapy. As he notes, the chemistry and alchemy of Paracelsus represent a world view and philosophy of nature as a whole. This view holds true not only for Paracelsus, but also for his followers who, for the most part, presented their chemical medicine in terms of a broader Chemical Philosophy of Nature that seemed to them to be a proper answer to the Aristotelian-Scholastic heritage they hoped to supplant.

Professor Domandl's study is similar in scope to the work of Weinhandl. Like the latter, Domandl is concerned with the place of Paracelsus in the development of German literature and philosophy and he has a special interest in the relation of Paracelsus to Kant and Goethe. Above all, Domandl seeks to show the significance of man in the Paracelsian universe. The rejection of the work of the ancients coupled with the close relationship of God to man required a new synthesis of religion and philosophy. In his treatment Domandl gives new emphasis to the views of Paracelsus on the Fourth Commandment and the banishment from Paradise. He calls attention to the Neoplatonic sources that influenced Paracelsus and he points to the *Astronomia magna* as the chief Paracelsian synthesis of Christianity and philosophy.

Domandl gives special attention to the concept of the "Wegführer" (on the highest level Christ) who will point the proper path to truth. This theme clearly has a special significance for the history of education. For Paracelsus the Light of Nature was best implanted in man at an early age and his emphasis on pictures as a teaching aid may be connected with his interest in the alchemical tradition of teaching the most profound truths through symbols and allegories. Domandl's work on this subject indicates the need for further research on the relationship of Paracelsus to the later educational work of John Amos Comenius. In a similar fashion, Domandl points to the high place of the physician as a leader:

Dies ist auch die Anschauung Hohenheims; denn so sehr Naturforschung und Arztum sein ganzes Leben erfüllt, die Philosophie ist ihm stets das Höchste, die Krone des Menschseins; aus dem Arzt muss ein Philosoph werden: "darumb ich billich sag, das aus eim arzt der philosophus geboren sol werden" (page 8).

These two volumes are the ninth and tenth of the substantial Salzburger Beiträge zur Paracelsusforschung. The series is sponsored by the International Paracelsus-Gesellschaft which Sepp Domandl serves as general-secretary. Earlier monographs in the series include contributions by Otto Zekert, Karl Greiner, Karl-Heinz Weimann, Kurt Goldammer, Lucianus Braun, Wolfram Schmitt, Otto Nowotny, and an important collection of essays on Paracelsus in a Festschrift dedicated to Otto Zekert. In addition to the monograph series, the Society publishes the *Paracelsusbrief* which regularly takes note of books and articles on Paracelsus, his work and his influence. Inquiries about the Society and its publications should be addressed to Professor Doctor Sepp Domandl, Altes Rathaus A-5020, Salzburg, Austria.

Reviewed by ALLEN G. DEBUS, Ph.D., Professor of the History of Science; Director, The Morris Fishbein Center for the Study of the History of Science and Medicine, University of Chicago, Chicago, Ill.

V. Kruta (Editor). *Jan Evangelista Purkyně (1787-1869) Centenary Symposium*. Held at the Carolinum, Prague, 8-10 September 1969. Brno: J. E. Purkyně University Press, 1971. 288 pp.

In Stedman's *Medical Dictionary* (20th ed., 1961), Purkyně (spelled Purkinje) is referred to as "Bohemian anatomist and physiologist." His name is attached to a variety of structures (Purkinje cells or corpuscles, fibers, network, system, vesicle) and functions (Purkinje conduction, figures, images, phenomenon or shift). His significance has been both worldwide and lasting. It was appropriate that the centenary symposium be sponsored not only by Charles University (his *alma mater*) and the University of Brno (named in Purkyně's honor), but also by the leading professional and scientific societies of Czechoslovakia (including the Academy of Science and the Medical Society which bears Purkyně's name) and pertinent international organizations (International Union of Physiological Sciences, International Brain Research Organization, and the Union Internationale d'Histoire et de Philosophie des Sciences).

The symposium had a threefold purpose: (1) To assess Purkyně's place in the evolution of medical sciences in the first half of the 19th century, (2) To trace the subsequent development of Purkyně's ideas and discoveries, and (3) To examine the present view of some of the structures and phenomena described by Purkyně.

The editor, Dr. V. Kruta, notes in his preface that Purkyně was a man of broad interests ranging from physiology through histology, embryology, phonetics, and physical anthropology to education, cultural history, organization of scientific endeavors, and politics. Nevertheless, Purkyně's primary concern was physiology and the symposium was centered on this facet of his work.

Papers constituting the proceedings were grouped in 4 categories: Purkyně and

the 19th century physiology (including Purkyně's contributions to physiological pharmacology and neuropsychopharmacology), Vision and eye, Nerve cells and fibers (with a focus on the "Purkyně cells" of the cerebellum), and a broader category entitled Structure and function (emphasizing Purkyně's research on the structure of the heart).

A special feature of the symposium, credit for which goes to Professor V. Kruta, as was noted by Prof. K. E. Rothsuh in his closing remarks, involved bringing together scientists, primarily neurophysiologists, active at the cutting edge of science, and historians of science. It was hoped that the researchers, limited to a narrow sector of science, would profit from exposure to the work and methods of thinking of an earlier generation of scientists and would become more aware of the necessity to evaluate scientific accomplishment of their predecessors in terms of the conditions of the times. On the other hand, the historians would learn that contemporary experimental research is still concerned with the problems to which Purkyně had addressed himself.

The majority of the speakers came from abroad and their ranks included such illustrious names as the Nobel Prize winners Sir John C. Eccles and Ragnar Granit. Their joint efforts represent a significant contribution of the international community of scientists and scholars to the appraisal of the many-faceted work of one of the truly great men of his time (*einer den ganz grossen Naturforscher seiner Zeit*, in the formulation of K. E. Rothsuh).

Reviewed by JOSEF BROŽEK, Ph.D., Research Professor of Psychology,
Lehigh University, Bethlehem, Pa.

Bliss Forbush, *The Sheppard & Enoch Pratt Hospital, 1853-1970. A History*. With a foreword by Lawrence S. Kubie. Philadelphia: J B. Lippincott Co., 1971. 266 pages. Ill. \$7.50.

Bliss Forbush is President of the Trustees of the Sheppard and Enoch Pratt Hospital and Headmaster Emeritus, Baltimore Friends School. He has written a chronicle of the hospital from its founding by Moses Sheppard to the present. Sheppard, a Quaker merchant of Baltimore, was a Warden of the city poor and a Commissioner of the prison. He had read of the moral treatment of William Tuke in York, England and was also influenced by Dorothea Dix who came to Baltimore in 1851-1852. Sheppard chartered his 1858 assylum, "to combine every feature that science and experience might indicate as requisite or desirable to minister to the greatest possible advantage of the patient." Sheppard directed that the trustees could only spend the interest on the funds received, consequently the first patient was not admitted until 1891.

As Laurence Kubie states in the introduction, "the Sheppard and Enoch Pratt Hospital is a sample of all human life; a microcosm that has passed through the

changes through which all human culture has passed in this century. All of this appears in the story of the Sheppard and Enoch Pratt Hospital, giving to that story a significance far beyond the pride of those dedicated people who have kept it alive and have implemented its work. This is a record to be proud of not because it is flawless, but because it has learned from its errors, some of which have even been shocking mistakes. Most important of all is the fact that it has struggled out of periods when it was frozen into a non-changing mold to regain its capacity for continuing change." Founded in the moral treatment era, admitting patients in the brain pathology era, providing the setting for Harry Stack Sullivan's clinical work and moving presently into community psychiatry—this prestigious private hospital has been involved in the great movements of American psychiatry.

Those who are interested in the larger scene of American psychiatry and psychology will appreciate the biographical details about Adolf Meyer, Harry Stack Sullivan, Edith Weigert, G. Wilson Shaffer and Laurence C. Kubie. There are four appendices: The Trustees of the Sheppard and Enoch Pratt Hospital, The Physicians and Psychologists 1891-1968, The Staff 1968-1969, and an Honor Roll of Employees, Service of Twenty Years or More. The index is fine.

The author is a good Quaker writing about a good Quaker institution. The august academic historian might level that derisive term "antiquarian" to such things as the picture of the Reno bus used in 1922 or the recording of the fact that Miss Bering in World War II, "has done extensive canning, particularly of tomatoes, of which we (raised) more than we could use. She has been up on many days, up at six in the morning and has not retired before half past twelve or one o'clock at night." Forbush adds, "only a few of the many with keen minds and tender hearts could be mentioned in this story." The writing is as straightforward as the benches in a meetinghouse.

This is a fine institutional history and a very welcome contribution to the meager collection of available books on the history of American psychiatry.

Reviewed by G. EDMUND GIFFORD, JR., M.D., Instructor in Psychiatry and Consultant to the Historical Collections, Harvard Medical School, and Associate in Medicine (Psychiatry), Peter Bent Brigham Hospital, Boston, Mass.

THE BULLETIN RECENTLY RECEIVED*

- W. von Brunn. *Kurze Geschichte der Chirurgie*. Berlin: Julius Springer, 1928. Reprint ed. Berlin-Heidelberg-New York, 1973. iv + 339 pp. Ill. DM 82/\$33.70.
- C. N. B. Camac. *Imhotep to Harvey: Backgrounds of Medical History*. New York: P. B. Hoeber, 1931. Reprint ed. Boston: Milford House, 1973. xxv + 324 pp. \$35.00.
- Emile Duclaux. *Pasteur: the History of a Mind*. With a Foreword by René Dubos. Philadelphia: W. B. Saunders, 1920. Reprint ed. Metuchen, N.J.: Scarecrow Reprint Corp., 1973 (Library of the New York Academy of Medicine, History of Medicine Series, No. 39). viii + 363 pp. Ill. \$12.50.
- Luis Garcia-Ballester. *Alma y enfermedad en la obra de Galeno*. Traducción y comentario del escrito "Quod animi mores corporis temperamenta sequantur." Valencia-Granada, 1972 (Cuadernos Hispánicos de Historia de la Medicina y de la Ciencia, XII. Serie A. Monografías). 368 pp.
- Erika Hickel. *Arzneimittel-Standardisierung im 19. Jahrhundert in den Pharmakopöen Deutschlands, Frankreichs, Grossbritanniens und der Vereinigten Staaten von Amerika*. Stuttgart: Wissenschaftliche Verlagsgesellschaft MBH, 1973. x + 294 pp. Tables. DM 55.
- Dieter Jetter. *Grundzüge der Hospital-Geschichte*. Darmstadt: Wissenschaftliche Buchgesellschaft, 1973 (Grundzüge, Bd. 22). vii + 125 pp. Ill.
- Helmut Leitner. *Bibliography to the Ancient Medical Authors*. With a Preface by Erna Lesky. Bern-Stuttgart-Vienna: Hans Huber, 1973. 61 pp. Fr. 26/DM 24.
- G. A. Lindeboom. *Reinier de Graff: Leven en Werken, 30-7-1641/17-8-1673*. Delft: Uitsgeverij Elmer B. V., 1973. 143 pp. Ill. 19.50 guilders.
- John J. McKelvey, Jr. *Man against Tsetse: Struggle for Africa*. Ithaca and London: Cornell University Press, 1973. xvi + 306 pp. Ill. \$12.50.
- E. M. Papper, S. H. Ngai, and Lester C. Mark. *Anesthesiology: Progress since 1940*. Coral Gables, Fla.: University of Miami Press, 1973. 192 pp. \$7.95.
- Alvin E. Rodin. *The Influence of Matthew Baillie's Morbid Anatomy: Biography, Evaluation and Reprint*. Springfield, Ill.: Charles C. Thomas, 1973 (American Lecture Series). vii + 293 pp. \$8.95.
- Martin Schrenk. *Ueber den Umgang mit Geisteskranken*. Die Entwicklung der psychiatrischen Therapie vom "moralischen Regime" in England und Frankreich zu den "psychischen Curmethoden" in Deutschland. Berlin-Heidelberg-New York: Springer-Verlag, 1973 (Monographien aus dem Gesamtgebiete der Psychiatrie, Bd. 10). ix + 194 pp. Ill. DM 98/\$44.10.

*The *Bulletin* reserves freedom of decision as to the publications to be listed in this section. Items received, other than those assigned for review, are ultimately incorporated into the collection of the Institute of the History of Medicine.

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Dr. Walter Pagel

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EDITORIAL

THE PAGEL FESTSCHRIFT

On Monday, 12 November 1973, Dr. Walter Pagel celebrated his seventy-fifth birthday. About six months earlier a splendid festschrift had appeared—two volumes of essays to honor him—under the title, *Science, Medicine and Society in the Renaissance*, edited by Professor Allen G. Debus of the University of Chicago. This stately work is now reviewed in the *Bulletin* (pp. 637-640 *infra*) and our readers will join the rest of the learned world in most sincere felicitations to Dr. Pagel, whose distinguished contributions to the history of medicine have dealt, in novel and stimulating fashion, with a major and universally recognized figure, William Harvey, and with a number of major but for long little appreciated and poorly understood figures, most notable among them Paracelsus and Van Helmont. To mention a few names among the many that could be listed is to give but a meagre concept of Pagel's many contributions to the history of ideas in the Renaissance; and yet it would be misleading to suggest that his work as a scholar has been restricted to a single period, neglecting, for example, what he has had to say about the enormously important nineteenth century. Neither would it be accurate to imply that his energies have been given altogether to scholarship.



For many years he spent his days, very actively and fruitfully, in a busy pathology department of a London hospital, his long evenings, often reaching far into the night, in his book-filled study at home; daylight hours have been given to the twentieth century, lamplight hours very largely to the fifteenth, sixteenth and seventeenth—and to the Greek and Roman eras which underlie them. (A few weekend hours have been regularly devoted to recordings and broadcasts of Bach.) Sharing in his interests and enterprises and yet sustaining scholarly pursuits of her own, his wife, Magda Pagel, has earned the plaudits of the scholarly world. In combining the life of a modern scientist and author with the life of a scholar, Walter Pagel has followed the career pattern of his celebrated father, Dr. Julius Pagel. More perhaps than any other historian of his time, Walter Pagel has entered into thought processes foreign to modern science and yet somehow directly related to it. At no time has he sought to be “relevant” in these studies, and yet at no time has he lost touch with the world of medicine around him.

That he may long and vigorously continue to guide and counsel the rest of us in domains where guides are few is the ardent wish of the “*Bulletin of the History of Medicine* and of medical historians everywhere.

Lloyd G. Stevenson

OSLER'S PRACTICE *

GEORGE T. HARRELL

Much has been written about the teaching of William Osler, which was a primary interest throughout his entire life. Little has been written on his private practice or how he supported himself as the head of a clinical department in a major medical school. He was remembered by students chiefly for his brilliant bed-side observations and analyses of illnesses in hospitalized patients. He made a life-long career of medical student, house officer, and post-graduate teaching, and was very proud of the fact that he taught students in the wards as an essential part of the educational process. His international reputation stemmed from his writings, which usually were stimulated by interesting cases he had seen. Indeed, his textbook was based largely on the autopsies he himself had performed. His lectures and speeches at medical meetings, his participation in various medical organizations, and intense interest in books and libraries contributed to his reputation. It is interesting to compare our present-day expectations of clinical faculty with Osler's performance in teaching, research, and patient care. His own experience undoubtedly formed the basis for the position he took in later years on the controversy over full-time faculty teaching positions.

Osler started his scientific career as a naturalist interested in descriptive biology. He was introduced to the microscope by Rev. William Arthur Johnson while he was a boy in secondary school and he retained his interest in this instrument throughout his entire life.¹ The early description of polyzoa in Canadian fresh-water ponds gave him a background for the later identification of amoebae in patients with dysentery, of malarial parasites in red blood cells, and the first identification of circulating blood platelets in human beings. He was one of the first clinicians to understand the importance of the clinical laboratory in the care of patients and as part of the teaching program for medical students in preparation for the practice of medicine. He was not interested in experimental research as we now usually think of it, although early in his career he did perform some simple projects

* Presidential Address, American Osler Society, Montreal, Canada, May 4, 1972.

¹ Maude E. Abbott, "More about Osler," *Bull. Inst. Hist. Med.*, 1937, 5: 765-796.

involving transmission of parasites such as trichinae. His breadth of knowledge in natural history, his interest in diseases of various animals which might be transmitted to man and his skill in performance of autopsies led to his appointment as Professor of Physiology in the Veterinary College of Montreal, a position he held simultaneously with one in the Medical School.

Osler personally performed the gross dissections in well over a thousand autopsies, and often prepared the microscopic slides himself. The correlation of pathologic findings at autopsy with the clinical course of the patient formed the basis for his textbook of medicine which was one of the most successful ever written. His skills and interpretation of pathologic findings led to what might be considered his first professional consultations through the performance of autopsies for practicing physicians in the hospital and even in the home. It is perfectly clear that these efforts were directed entirely toward a scientific basis for his intellectual interests and not as a means for generating income and support. It was his textbook and other writings that generated the demands on him for consultative practice, which grew oppressive over the years, and were a major factor which led to his leaving North America for England.

Canadian Period

Osler was born in Canada and was educated there. After graduation from medical school in Montreal in 1872, he went abroad for a period of two years' study as was the frequent custom of the day.² During this time, he came under the influence of Virchow who was the most prominent medical figure of the period. In 1874, after his return to Canada from abroad, he was broke. To earn some money in the spring of that year, he served as a locum tenens for Dr. A. H. Walker in Dundas, Ontario, his home town. Here he earned his first recorded fee for a professional service by removing a speck from the cornea. Later that year, for a month during June and July, he served as a substitute for Dr. Charles O'Reilly, who was resident physician in the City Hospital at Hamilton, Ontario. For this service he received \$25 and a pair of old-fashioned, elastic-sided boots, "which were too small for Charlie O'Reilly."³

² Harvey Cushing, *The Life of William Osler* (New York: Oxford University Press, 1940), vol. 1, pp. 120-177.

³ William White, "Osler: student, physician, author," *Int. Rec. Med. & G.P. Clinics*, 1954, 167: 499-514.

In August, 1874, when he was age 25, Osler went to Montreal as Lecturer in the Institutes of Medicine at McGill University Medical School, teaching physiology and pathology. Since it was the custom of all faculty to see patients, he set up an office in a room at 20 Radegonde Street with a desk, chair, and bookcase which he purchased for \$24.75 and sold two years later. His consuming passion for books, which grew over the years, is clearly evident at this time. No one seemed to know his office hours, and if he had them, he never kept them. He apparently was rarely at home and it is doubtful if he accepted any patients for delivery of primary medical care. He did, however, acquire some consulting practice. At this time, he began to keep a simple day book listing by name the patients seen with the fees collected, and for a short time he also listed his expenses.⁴ The annual summaries indicate he considered teaching to be his primary responsibility since the fiscal year was September to September corresponding to the academic calendar.

In 1875, Osler was put in charge of the smallpox ward in the Montreal General Hospital, his first clinical appointment. His accurate observations on the early rash in smallpox led to the first English language publication on the subject.⁵ For the clinical service he received \$600 and spent the money to purchase 12 Hartnack French microscopes, lamps, and accessories to help in the teaching of normal histology to his students. During this time he reports he would often go to R. Palmer Howard and others for \$25 to buy instruments to teach physiology, which included histology in the English system. In the autumn of that year, while eating in the Metropolitan Club, he met a young Englishman who was obviously ill. Osler diagnosed smallpox and cared for the young man who soon died. Osler wrote the father and this act of thoughtfulness concerning a patient so impressed the family that 30 years later while he was at Oxford the sister of the patient recalled the letter and the comfort it had given to the family.

The rent on his small room was \$15 a month and he boarded elsewhere for another \$20. Clearly his practice was minimal. Subsequently he moved to 1351 St. Catherine Street where he rented second-floor space in a house occupied by an ophthalmologist. He used the front room for a consultation room, library, and office combined, and lived in

⁴ William Osler, Daybooks in Osler Library, McGill University, Montreal, 1874-1918.

⁵ Joseph H. Pratt, "The influence of Osler on the practice of medicine," *Boston Med. & Surg. J.*, 1927, 196: 83-89.

a room back of the office. He purchased a couch, chairs and table for \$41 so the furnishings must have been simple. His consultation room is described as filled with books and used primarily for his writing. The largest items listed in his expense accounts are for books. He still apparently was not interested in private practice and had no desire to develop any. An interesting anecdote of the period concerns an encounter with an old man on the street.⁶ Osler gave him some money and his overcoat. The old man died two weeks later and willed the coat back to Osler who did not have enough money to buy another in the interim. His expense book lists \$7.50 for "turning overcoat" about this time. During this period, he commented that a man could not make more than a bare living and be a competent physician.⁷

By the autumn of 1879, Osler had students living in the house with him. They described his office as littered with books and could recall only three consultations he had done during their stay with him. One of the consultations was on a member of the Board of Trustees of the Montreal General Hospital who had lumbago. Osler is described as having treated him with acupuncture, an astonishing act for an alleged therapeutic nihilist. From the descriptions of the reaction of the patient, the needles must have been inserted far below the skin and Osler is described as disappointed in the failure of the method to relieve the patient.

Philadelphia Period

In 1884 when he was age 35, Osler was called to the University of Pennsylvania to fill the Chair of Clinical Medicine. It was necessary for him to borrow \$1000 to make the move.⁸ All teachers at the medical school were active practitioners, usually in general practice, which included house calls and regularly scheduled afternoon office hours. Accordingly, in October of that year, Osler rented a row house at 131 South Fifteenth Street where he remained for three years.⁹ He had two rooms, both lined with book shelves, one of which was used as an office and one as a waiting room. He apparently also slept there since he had arranged for breakfast to be served by the owner. Osler considered himself primarily a teacher and consultant clinician rather than

⁶ W. R. Dancy, "A man of medicine," *J. Med. Assn. Ga.*, 1930, 19: 175.

⁷ E. J. A. Rogers, "Personal reminiscences of the earlier years of Sir William Osler," *Colorado Med.*, 1920, 17: 88-94.

⁸ Frederick T. Hill, "Addendum to an Osler item," *Laryngoscope*, 1953, 63: 142-146.

⁹ Cushing, *op. cit.* (n.2 above), pp. 234-304.

a practitioner. It is apparent that he had very little private practice and made no attempt up to this time to develop any. He maintained no regular office hours and saw patients only by appointment. He continued to limit himself to consultations and got all he would bother with, apparently selecting interesting rather than lucrative cases to see. Most of them appear to have been physicians or members of their families. Osler did consultations in the home as well as in the hospital. A former colleague described a visit where Osler quickly agreed to the medical problem and spent the rest of the time in the patient's library looking at the books.¹⁰ The patient complained that he thought he was inadequately studied. One of the patients he saw was the poet, Walt Whitman, whom he continued to see in consultation over a period of two years. Although Osler had to travel to Camden to see the patient, he apparently never made a charge. Whitman did not like Osler's jaunty bedside manner, but admitted his visits were inspiring. He resented Osler's dismissal of his stroke as a trivial illness.¹¹

In the fall of 1887, Osler moved to 1502 Walnut Street which he also rented. These surroundings are said to have been far more pleasant than the other house, but he maintained the same type of plain office. Some comments from people who knew him indicate that he rarely had much money, so his practice must have been small. He was still single and apparently had little interest or personal need for much income. He did not maintain a carriage as many physicians did and appears to have walked to many of his activities. Kelly recalls a consultation on a case of anorexia nervosa which required an hour's ride on a streetcar. The scope of his consultative practice was clearly increasing, however, as a result of his developing reputation. In 1888, for example, he was called to Toronto in consultation for two days. In 1889 he went to Montreal during Howard's terminal illness and while there was called in consultation to Ottawa before returning to Philadelphia.

A comparison of Osler's work in the outpatient clinic with that of other clinicians on the faculty is illustrated by comments on his work at the Orthopedic Hospital and Infirmary for Nervous Diseases.¹² Osler would devote 30 minutes to an hour to his first case and at least 30 minutes to the second one. He appears to have followed this pattern

¹⁰ Maude E. Abbott, Editor, *Appreciations and Reminiscences of Sir William Osler* (Montreal, privately issued, 1926), pp. 228-260.

¹¹ William White, "Walt Whitman on Osler: He is a great man," *Bull. Hist. Med.*, 1944, 15: 79-90.

¹² Pratt, *loc. cit.* (n.5 above), p. 85.

for the length of time devoted to a consultation in his private practice for the rest of his life. In the remainder of the scheduled two-hour clinic visit, he might see one or two more patients but rarely more than three or four in all. The chiefs of the other services would see 10 or more cases in the same time. Osler vigorously criticized the practice of seeing cases hurriedly and making snap diagnoses. During this period, he had made in London to his design a binaural stethoscope to improve his skill in physical diagnosis.¹³

One reminiscence by a former student gives some insight into his approach to practice. Osler admitted a private patient to the hospital and left her in the care of the resident physician. The lady had neurasthenia which interested Osler little so that he did not see her for as long as two days at a time. The small amount of time he spent with his own hospitalized private patients is commented on repeatedly over the years, especially for patients without advanced organic disease. On other patients with interesting disease problems, he would make repeated visits for teaching.

Osler would arrive at the University Hospital by streetcar carrying his lunch. After teaching rounds with students he ate his cold lunch, washed down with milk picked up on the ward. He would then collect a group of students and spend the afternoon at Blockley doing post-mortem examinations instead of seeing patients in his office. Within a month of his arrival in Philadelphia, he had improvised a small clinical laboratory under the hospital amphitheater and there used his own Zeiss microscope to teach students. His personal microscope was the only one in use at the University Hospital at that time. He continued his microscopic investigations demonstrating tubercle bacilli in lesions of acute tuberculosis and malarial parasites in the blood of patients. After leaving the hospital, he often would drop into the residence of Dr. Samuel Gross near his own house to have tea and to meet many young people who gathered there. It was here he met the future Lady Osler. He would then go to the College of Physicians Library where he would read from 5 to 6 in the afternoon. He usually ate dinner at a club, but did not use these social occasions to increase his practice. He was writing more and more. After the announcement of his appointment at Johns Hopkins, requests for consultations began to pour in. The testimonial dinners held at the time of his departure clearly brought

¹³ Charles D. Parfitt, "Osler's influence in the war against tuberculosis," *Canad. Med. Assn. J.*, 1942, 47: 293-299.

out Osler's emphasis on the postmortem room, the laboratory, and the microscope in the training of the physician. He commented that, "It is not necessary for every man to be a practitioner in the ordinary sense, but long years of hospital and laboratory work constitute a better equipment for the teacher and consultant."

Baltimore Period

Osler moved to Baltimore early in May, 1889, when he was age 39 to become Chief of the Medical Department of the Johns Hopkins Hospital. The Hospital had been under construction for twelve years and finally was opened on May 7. One of his great disappointments was that the clinical laboratory for the Hospital had been entirely forgotten and had to be improvised in borrowed space.¹⁴ Osler lived in the interns' quarters at the Hospital from his arrival until the fall of 1889. He then rented a house at 209 West Monument Street where his niece, Georgina Osler, came to keep house for him. This arrangement gave him the first opportunity he ever had of entertaining in his own home. He must have seen patients there, but they were few in number. For the first time he had a regular salary, \$5000 per year, which apparently never changed while he was in Baltimore.

Osler went abroad for five months, April to September, 1890, and on his return began work on his textbook. In May of the next year he gave up his house and went back to the hospital where he completed the writing of the first edition of the textbook, working in his bedroom. All of his previous papers, autopsy reports, and patient notes had been written out in longhand. Now for the first time he had a secretary.

The first edition of the textbook was published in 1892. Osler had been guaranteed a circulation of 10,000 copies in two years, and an advance of \$1500 on the date of publication. The first printing of 3,000 was quickly sold out. In all, the first edition sold an astonishing 23,000 copies but it did not provide a steady supplemental income until 1894.

As Chief of the Medical Service he could supplement his salary by private work. He made no charges for consultations on patients on the private wards though he had every right to do so. He apparently did admit occasional patients to the private ward but income was never the first consideration in the number or type of patients he accepted. He commented that he was more interested in building up the patronage for the Hospital than for himself. In his letter to President Remsen in

¹⁴ Abbott, *op. cit.* (n.10 above), p. 268.

1911 he states that he took out of Baltimore not a cent of all the fees he received in the 16 years of work there.¹⁵ This statement may appear to be in conflict with one in the day books on his investments made before he went to Oxford. There he states that none of the fees came from patients in the Hopkins Hospital and he may have been referring to that point in his letter to Remsen. He clearly charged patients he saw in the office. When the Hospital opened there were no medical students, so that teaching rounds were composed of house officers, post-graduate students from other medical schools, and large numbers of practicing physicians from Baltimore and elsewhere who trailed along through the wards. The medical school did not open until 1893 and clinical instruction of students did not begin until 1895.

On Saturday, May 7, 1892, when he was age 42, Osler took an early morning train to Philadelphia and at 2:30 in the afternoon was married to the widow of the surgeon in Philadelphia whose house he had frequently visited.¹⁶ He saw patients the afternoon before and apparently made rounds in the hospital that morning. Osler and his bride went abroad and on their return purchased the house at 1 West Franklin Street which reminded him of her home at 1112 Walnut Street in Philadelphia. During the succeeding 14 years, until he left for England, he lived, entertained, and practiced there. As late as the middle 1890s, though, he apparently still rode the streetcar to the Hospital. By 1893 he had begun his regular afternoon "at homes" and later his Saturday night dinners for two medical students serving as his clinical clerks, followed by larger informal sessions around a table over books from his collection when beer, pretzels, or sandwiches were served. His life style was permanently altered. Whether this change was due to his marriage and the influence of Lady Osler on his personal life or to the simultaneous publication of the textbook with the increase in referral practice it generated is difficult to say. That he recognized the change in his pattern of living is shown by the summary prepared later at Oxford which concludes with the year 1893.

Osler was always methodical, and his life was very orderly with a regular schedule that varied little from day to day. He was always prompt and had a reputation for being five minutes early to clinics and

¹⁵ *William Osler*, privately printed; reproduced in *Canad. Med. Assn. J.*, 1962, 87: 762-765, and in *William Osler: The Continuing Education*, edited by John P. McGovern and Charles G. Roland (Springfield, Ill.: Charles C Thomas, 1969, pp. 291-299).

¹⁶ Cushing, *op. cit.* (n.2 above), pp. 361-431.

other scheduled activities. He would do what he considered his important work early in the morning, which included writing, holding clinics, and his 8 a.m. teaching rounds. Osler was very proud of the organization of the medical unit at the Hopkins, where all activities for teaching and patient care were under the direction of the physician-in-chief with his resident staff and assistants. He would make his rounds on charity patients and then go to the private ward. He spent a short time with private patients coming in and out of the room quickly so that patients frequently complained that they did not have time to talk with him or to retaliate to his remarks. He had an unusual facility to make all patients feel that he was interested in them as persons, whether they were on the public wards or on the private pavilion. Commenting on his own stay in the hospital as a typhoid fever patient, Thomas McCrae recalled most vividly the feeling of confidence engendered in him by Osler.¹⁷ Though he emphasized that the hospital had been built for the medical students and their teaching, apparently Osler did not take students serving as ward clinical clerks to see his private patients. Only the resident physician in charge on the private ward saw them and house officers seldom came directly in touch with other patients in his private practice. He stressed meticulous clinical observation with emphasis on diagnosis and pathogenesis of disease. Laboratory findings were a strong point in the teaching, but definitely were secondary to observation. He occasionally would give a house officer \$5 to run a urine on a rich patient. He required students to follow through in the home after discharge of ward patients seen in the hospital or his noon clinics and to report back on their findings to the other students. As long as 25 years after they had been seen, Osler could still recall the details of patients and could produce notes to reinforce his memory and to test his accuracy.

On the conclusion of his rounds on the private ward, Osler would return home, have a cold lunch at 1 p.m., and after 20 minutes rest would start seeing patients. After his marriage, for the first time he set definite hours for private practice in his home—between 2 and 4:30 in the afternoon. He would then stop and go to tea with his wife and visitors. He would shortly excuse himself and go to see patients in consultation

¹⁷ Thomas McCrae, "Osler and patient," *Bull. Johns Hopkins Hosp.*, 1919, 30: 201-202. This entire issue of the *Bulletin*, pp. 185-219, is devoted to a series of short papers on Osler.

in their homes, riding in a hansom cab, wearing a frock coat and top hat, or spend the rest of the afternoon in the Library of the Medical and Chirurgical Faculty.¹⁸ He would have dinner by 7 p.m., spend the evening in meetings, reading, or in social activities, but would retire early by 10 p.m.

Osler apparently was not encouraging practice in his office. Up until his marriage the day books show that he was seeing patients every day of the week. By 1893, he had stopped seeing patients on most Sundays. By 1894, the pattern of practice he was to follow the rest of the years in Baltimore was established. Osler had no telephone in his home, and used the one maintained by Thayer and the group in practice next door. A hole was made in the back yard fence so that Osler could go through to take calls. He was being asked repeatedly for out-of-town consultations and traveled far and wide by train. He commented that the consultant's life was not a pleasant one, having to pass judgment on patients with incurable diseases. By 1898, he commented that he was feeling "horribly driven" by consultations. He was traveling to Massachusetts, Iowa, Florida, Richmond, Rochester, Buffalo, and Minneapolis to see patients. The pressure of consultative practice is illustrated by a note that he went to New York City for only two hours to see a patient. He was still going abroad for the summers or to Canada for long vacations. In 1902 he spent the summer in the St. Lawrence Valley so that he would not be bothered with patients. The peak year of his practice in Baltimore was 1903 (Figures 1 & 2).

The patient records are on 6x6 inch plain white cards. The history is very abbreviated and written in long hand on one side. The physical examination also usually is very brief and hand written. Occasionally a more detailed examination is written in another hand or typed on the back and from the difference in style appears to have been dictated. Almost no laboratory data are recorded. No final or differential diagnosis is made and only rarely is a note made of instructions to the patient or of a suggested treatment. Several words of symptom or diagnosis may appear at the top of the card above the history and apparently were used to locate cases for publication¹⁹ (Figure 3).

During his early years in Baltimore, he took great interest in public health problems, particularly tuberculosis and typhoid fever, both of

¹⁸ Lewellys F. Barker, *Time and the Physician* (New York: G. P. Putnam's Sons, 1942), pp. 104, 200.

¹⁹ William Osler, patient records in Osler Library, McGill University, Montreal.

March, 1903		Daily		Second		March, 1903	
NAME	Pr.	M.	Th.	W.	Th.	Brought Forward	Total
	21	22	23	24	25	26	27
Miss Melaniphy							
Dr. Corwell Leavenworth							
Am. Middlebury							
Mr. Green Corwell							
First Nat. Bank							
Dr. Pennington St. Paul Minn							
1111 Double Mountain Ave							
Mr. Turner 1036 1/2 Calv.							
C. J. Stone Wash Dc.							
Mr. Southwestern Hospital St.							
Mr. St. Louis Post-Office St.							
Mr. Sanborn Wash Dc.							
Mr. Newcomb Wash Dc.							
Mr. Fitzgerald Proctor							
Mr. Williams Birmingham Ala							
Miss Orin							
Miss J. L. Stone Wash Dc.							
Mr. Stewart Farmington, N.H.							
Mr. Brown Indianapolis Ind.							
S. J. Gay Hall 1319 Park Ave							
Miss Whitridge 16 W. Reed							
Dr. Hays Wash Dc.							
Miss Gay Dublay Wash Dc.							

FIGURE 1

Typical page from daybook for week of March 22-28, 1903, showing patients seen. C appears to indicate consultation.

which were rampant in the city. He was interested in the home treatment of tuberculosis and there is a record of a consultation in Cumberland, Maryland, on a patient being treated in this fashion. In his teaching, Osler would refer to errors he had made in his consultative practice. One anecdote by a former student tells of a pelvic tumor in a patient seen in the clinic which disappeared on catheterization. Osler recalled having seen an elderly man in consultation for a similar problem in which he diagnosed sarcoma and recommended surgery. The surgeon catheterized the patient who turned out simply to have hypertrophy of the prostate.

After the disastrous 1904 fire in Baltimore, the Hospital was having a difficult financial time and Osler offered his salary to maintain its publications, but the offer was not accepted. He was depending on his practice to support himself. Later in the year he accepted the call to Oxford. He mentions the grind of consulting practice, which clearly

Angina pectoris near fatal High Room.
2 1/2 1/3/04
Dr. R. MacCall.

1216 18th St Wash. D.C.

Man in walking all over body. - had grippe & heart troubles. Had a severe grippe ^{with} after eating some cherries. 2 attacks one after dinner hurriedly a 20 pain in chest. hand & wrist. & once after that had 7 again. Think both were indigestion. Plus another - grippe. but began as early as Oct. had the pain chiefly in the stomach in walking - almost died - felt as badly. & has now in stomach stop by sleep. sleeping now with face & when this still goes in a few minutes. Has had something from very when & goes down the left arm - both at times. From one in legs. Turn pale in the middle. & get blood about mouth. Eventual with attacks. Never has fainted. just under the breast bone. any mental agitation. but from muscular prostration. but still, of course. In last few years nervous trouble. often eating well cause it. Then well. almost the worst winter. Had heart trouble for 25-30. No other than a shock. has been nervous & something attacks. on some and had decided functional trouble. very attacks in the throat. chokes - not have a strong woman. strident, was that. - & child born shortly after.

1) quit life.
2) caught with diet
3) mod. exercise
4) Dulce-syrupum 99.

FIGURE 3

Typical record of patient seen in office, May 24, 1904.

in its dietary etiology. He spoke of the improvement which could be expected with a simple iron preparation, such as Blaud's pills. He used quinine in the treatment of malaria, but was insistent that the parasite be demonstrated in the blood. He had little patience with the elaborate prescriptions written by many physicians without any scientific evidence that the ingredients were effective. Though Osler's practice office was opposite the pharmacy of Hinson, Westcott and Dunning, an analysis of 200,000 prescriptions filled there during the period 1898-1906 showed that only 130 were written by him.²⁰ Of these, 120 were for a single ingredient of which the most common was ergot (23), nitroglycerine (12), potassium iodide (6) and ferric carbonate (5). In all, his prescrip-

²⁰ David I. Macht, "Osler's prescriptions and materia media," *Trans. Amer. Thera. Soc.*, 1936, 35: 69-85.

tions called for 50 different drugs or ingredients. Only 10 contained two or more substances.

Oxford Period

Osler arrived in Oxford on May 27, 1905, when he was age 55, to become the Regius Professor of Medicine. This position was essentially the head of the medical school. The curriculum was a traditional English one with the basic sciences of physiology, anatomy, and pathology taught in the University. A small pharmacology laboratory also was present. Students then went to a hospital school, usually in London, for clinical work in the fourth and fifth years of the curriculum. The professorship required only that he deliver several lectures a year and the rest of the time was free for other academic or personal activities. His responsibilities as the Regius Professor took him all over Britain for lectures and meetings of various kinds and he made frequent trips to the Continent and America. Osler was inducted as a "student" of Christ Church College which gave him an academic home. This position provided sleeping rooms in the College which he loaned to visiting physicians. He had a special stall in the cathedral adjoining the College. The position of professor automatically made him a Curator of Bodley with responsibility for policies in the Bodleian Library which he expected to make his physical base. He had an official room in the Museum with two laboratories adjoining.

The salary for the professorship was only £400 per year, but he lists a slightly higher income from "college" over the next few years, which included some student fees for examinations elsewhere. By the fall of 1905, the hundred thousandth copy of the textbook was sold, but royalties on his writings were far less than his income from practice. His books on angina pectoris and abdominal tumors apparently never sold enough copies to earn more than a nominal return.

Osler was quickly elected an Active Consultant at the Radcliffe Infirmary, which contained 150 beds and an outpatient department. This position carried no responsibility for direct care of patients, but made all patients of any physician or clinical service available for teaching. Apparently, he did not admit any patients to the Radcliffe directly under his care.

Osler rented a house at 7 Norham Gardens and lived there until he purchased the house at #13 into which he moved in January, 1907. This large house became the "Open Arms" so familiar to students and

visiting medical people. The first patient in Oxford was a lady from the United States who was seen on May 29, 1905. By June, the pattern Osler followed until the war was set. He appears to have maintained a small consultation room in his home which was off limits to visitors or those living in the house temporarily. By July, he was seeing patients from New York and Eau Claire, Wisconsin. By November, he was doing consultations in the countryside with general practitioners and in town, presumably London, where Mrs. Osler noted he had done two in one afternoon. He was, however, seeing far fewer patients than in Baltimore. The number of patients coming from abroad, particularly from the States and Canada, increased. Many of the names listed around 1910 are the same as those appearing in the Baltimore day books. An interesting note is that on November 29, 1913, two patients who knew each other in Winnipeg appeared for consultation on the same day, neither knowing the other was coming.

By the fall of 1905, Osler had organized teaching rounds for 15-20 junior students on the wards at the Radcliffe.²¹ He quickly found that their background was inadequate for the same level of teaching he was accustomed to doing at the Hopkins; therefore he instituted his familiar observation clinics emphasizing physical diagnosis. He invited groups of 10-12 students into his home for dinner 2-3 times per year. After the table was cleared, he followed the practice of the Saturday night sessions in Baltimore and brought books on history from his library and passed them around to start a discussion. He held a clinic each Tuesday to which he sent invitations to all practicing physicians within the area. An average of 20 general practitioners came regularly from a distance of up to 20 miles. Osler also began a weekly consultation-clinic for the local physicians on Sunday mornings at 10, but these were stopped during the war. Osler knew all the physicians in the area and apparently felt a responsibility to them for continuing education. He was proposing programs for postgraduate education for country practitioners in all of England. His relationship with the profession there appears to have been very close. Osler always had been interested in general practitioners, particularly the older ones, and his interest appears to have been increased by the more intimate contact with those around Oxford. His interest in the practicing physicians appears to have been a genuine one in their welfare and not an attempt to increase his own practice.

²¹ "F. G. Hobson, Sir William Osler, Bart.," chapter in *Oxford Medicine*, edited by Kenneth Dewhurst (Oxford: Sandford Publications, 1970), p. 88.

In the fall of 1913, after long negotiations, the General Education Board set up by the Rockefeller Foundation offered a grant of \$1.5 million to the Johns Hopkins Medical School. The purpose of the grant was to organize the Departments of Medicine, Surgery, and Pediatrics so that the professors in charge with their staffs could withdraw from private practice and devote their entire time to the academic programs in their respective departments. Osler did not approve of this move and in addition to his earlier letter to President Remsen wrote to his friends on the faculty at Hopkins, and to the medical press. He advised that professors should not be insulted by the offer of a full-time salary of \$7,500. Barker ultimately was offered \$10,000, which would be \$42,160 in 1972 terms, but rejected the offer. Osler emphasized the need to keep in touch with the profession at large so that the teaching could be relevant to the practice of medicine for which the students were being prepared. His letters point out the damage he feared would be done to the teaching program if the professors led their lives in clinical and laboratory seclusion. He apparently sensed the changing conditions and need for a new look at teaching positions, so that four months before his death he recommended to the Dean of the Faculty at McGill consideration of whole-time positions.²²

The year 1913 was the peak one of his practice in England. The patient records from the Oxford period reviewed are the same as those from Baltimore.

Osler saw the Prince of Wales, then a student at Magdalen College, on several occasions in 1914 and made notes in the day book about his stature. Such notes on patients in these books are rare. The outbreak of the war is not noted in the day book, but the number of patients seen in September and October dropped. By November, blank days or weeks appear with notes of visits to military hospitals. Apparently, he continued to see civilians in consultation as he traveled around. The war altered his life drastically. Osler was appointed an honorary Colonel of the Territorials, but he wore his uniform only on official visits to military hospitals. He reduced the time spent at Oxford and turned back his salary to the University for the duration of the war. He began to give lectures at the camps, particularly on typhoid fever, which he had studied intensively ever since his days in pathology. He made regular consultative visits to the Canadian military hospitals and later to the American hospital units when they came over. The number

²² William Osler, reproduced in Bull #9, *Inter. Assoc. Med. Mus.*, 1926, pp, 591-592.

of people from abroad who visited him increased greatly with the war. The contacts with Rhodes Scholars from the States and Canada, particularly those who were medical students, is well known.

By 1915, Osler was seeing the Foreign Minister, the wife of the Prime Minister, and other important people. On May 28 he noted, "completed today 10 years in Oxford—extraordinarily happy years." He stated he missed the active teaching of students, but consoled himself with the 31 years devoted to it in Canada and the States. He continued his writing. During the last years in Oxford, Osler's chief intellectual interest appears to have been the organization of the books he had collected over the years into the working library which he willed to McGill. He stated to Thomas Malloch that he bought the books with a percentage of his income from consultations and "that is how I sanctify the fee."²³ His brother contributed substantially to the purchase of the more expensive volumes, since he knew the books eventually would come to Canada.²⁴

By 1916, the day books show increasing numbers of blank days with apologetic notes of colds or other personal illnesses. The page for the week of August 30, 1917, has a long-hand note on that date describing the arrival at 4:15 p.m., after he had seen patients, of the telegram telling of the fatal wounding of his only child, Revere. The touching tribute indicates how very close he felt to his son and the loss took much of the drive and fire from Osler's life.

During the fall of 1918, the influenza epidemic was severe. For possibly the first time in his life, he did house-to-house practice in Oxford, seeing both adults and children. An interesting note by a physician tells of his brother who had whooping cough.²⁵ Osler came daily for 40 days to see the child and personally fed him on each occasion. He could not bring himself to tell the family the hopeless prognosis, however. On other occasions Osler would give encouragement to the families of hopelessly ill patients to the dismay of the local physicians.

The day books do not mention the armistice and Osler saw patients as usual that week. After the armistice he recommenced his teaching activities for medical students and practicing physicians. In January, 1919, after the conclusion of one of his Sunday morning clinics, he performed a post-mortem examination at the Radcliffe on a man with

²³ Thomas A. Malloch, mss. transcripts of diary in Osler Library, McGill University, Montreal.

²⁴ Cushing, *op. cit.* (n.2 above), 2: 419-453.

²⁵ Patrick Mallam, "Billy 'O'," chapter in *Oxford Medicine, op. cit.* (n.21 above), p. 94.

influenzal pneumonia. Apparently this was the last autopsy he did personally. During the week of July 6 he saw no patients, but describes in the day book the pneumonia he contracted then. He saw patients July 23, but then took a long holiday. He resumed seeing patients September 16 and the last patient recorded was the daughter of a physician examined on October 1. Osler developed an empyema which required surgical drainage and he predicted his death four days before it occurred. On December 29, 1919, at age 70 he had a fatal hemorrhage from the wound.

Osler's influence on medical education and practice was unequalled in his day. His approach to teaching students at the bedside on the wards by observation, correlation and interpretation indicates he kept clearly in mind his primary goal of clinical training for the practice of medicine and the high standards he set persist to the present.

Fiscal Data

The day books written in longhand form a fascinating record of Osler's practice. The first line in the first book started in Dundas in 1874 records a fee of 50¢ and the next day one for \$1 for the same procedure. After he was in Montreal, Osler charged 75¢ to \$1.50 for an office consultation and listed 17 patients seen the first year, some on account. He listed a fee of \$2 for examination of the urine, one of the rare notations for a charge for laboratory work. He lists his total income for 1874-75 as \$1813, of which \$1129 was from student fees. He was still receiving some support from his father at this time. The day book for the next year shows usually only one patient per week, though occasionally he saw three on one day. The total number listed for the year was 26. Most of the fees were \$5, with the largest \$15. One fee of \$5 is listed for examination of the blood, and one of \$25 for a postmortem, the last such notations. His income for the year 1876-77, including his college fees of \$907, was \$1178, the low point of his Canadian period. This amount would correspond to \$6433 in 1972 terms.²⁶ For the last full year in Canada, 1882-83, his fees from students were \$2800 and total income \$3884, which would be \$22,838 in 1972 terms. The fees for most office calls were \$2 to 5, but some consultations are listed with fees of \$50-200. In a summary apparently prepared many years later in Oxford, he lists his total income from all

²⁶ Consumer Price Indices, Bureau of Labor Statistics, U.S. Department of Labor.

sources in Montreal from 1874-84 as \$22,020, of which only \$5892 came from practice (Table 1).

After the move to Philadelphia, Osler's practice was fairly stable for the first three years. For the academic year 1887-88, he lists his total income as \$5240 of which \$2261 came from student fees listed as "college." He was seeing 1 to 2 patients per day, 5 per week, with many seen in the home as judged by the addresses listed. His usual fee was \$10, but several are listed at \$300, one at \$500, and one at \$600, the largest up to this time which would be \$3868 in 1972 terms. The day book shows a gap over the summer as it did in many other years. The

TABLE 1
Sources of Income

Year	College Fees ¹	Canadian Period		1972 Equivalent
		Practice	Total ¹	
1874-5	\$ 1,129	\$ 684	\$ 1,813	\$ 9,413 ²
1875-6	1,200	438	1,638	8,854
1876-7	907	271	1,178	6,433
1877-8	1,140	360	1,500	9,086
1878-9	1,218	542	1,760	10,785
1879-80	1,055	314	1,369	8,095
1880-1	1,738	1,040	2,778	15,869
1881-2	2,400	700	3,100	17,174
1882-3	2,800	1,084	3,884	22,838
1883-4	2,541 ³	459	3,000	19,048
	<u>\$16,128</u>	<u>\$ 5,892</u>	<u>\$22,020</u>	<u>\$127,595</u>
Philadelphia Period				
1884-5	\$ 1,740	\$ 460	\$ 2,200	\$ 14,358
1885-6	2,050	3,575	5,625	36,316
1886-7	2,067	2,152	4,219	27,198
1887-8	2,261	2,979	5,240	32,729
1889	2,200	5,130	7,330	45,580
	<u>\$10,318</u>	<u>\$14,296</u>	<u>\$24,614</u>	<u>\$156,181</u>

¹ From Volume 1 of daybooks as summarized by Osler. Figures for practice are the difference between his totals and college fees and include gifts, lecture fees, royalties from publications.

² Based on Price Structures in the United States for the same period.

³ The college fees for 1883-4 were not summarized by Osler and were reconstructed from the 15-year summary.

year 1889, which ended September 30 in the day books, shows an income of \$7330, which would be \$45,580 in 1972 terms, of which student fees accounted for \$2200. Most of the patient entries must have been made before he left Philadelphia. Of his total income of \$24,614 for the period 1885-89, \$14,296 now came from practice. He notes that his total college "salaries," which included student fees paid to him directly, for the 15-year period 1874-89 was \$26,386, or an average of only \$1759 per annum. Except for the one advance of \$1500 on his text, a few gifts from his father, and an occasional lecture fee, the rest of the money he earned came from practice.

Beginning in January, 1890, after the move to Baltimore, the day books permanently change the fiscal year to January through December, which would seem to indicate a change in outlook. The day book lists 1-3 patients per day, 3-10 per week with the usual fee, \$10. One office visit on September 22 lists a fee of \$1000. The income from practice was \$2976 that year, which would be \$18,505 in 1972 terms. While writing the text, he lists only 2 patients seen during July for which he received fees of \$250 and \$500, and none seen in August or September. Before his marriage, he would see 1-4 patients per day, 10-15 per week. Most fees were \$10, many were \$25, with occasional ones \$100-150, and the largest for 1892, \$200. The total income of \$12,570 for the year 1893 corresponds to \$76,693 in 1972 terms. The maximum income received from the textbook was \$8490 in 1894, which included the royalties for 1892 in excess of the advance payment and those for 1893. After his marriage, he would see 5 patients in consultation most days, with the range 3 to 7, and usually only 1 on Saturday. The number of large fees began to increase and by 1895 fees of \$1000-1500 were frequent. Interestingly, many of the larger ones listed were paid by the estates of patients. His income from practice in 1895 was \$9687, from the textbook \$3674, which with the salary of \$5000 gave him a total of \$18,361 or \$120,576 in 1972 terms (Table 2).

The income from practice steadily increased and after the long vacation of 1902, he was back to his schedule of 5 patients per day immediately on his return. More of the patients seen were paying fees than formerly and most of the names listed in the day books show out-of-town or out-of-state addresses. Two fees that year were for \$2000, and many were for \$500. Even though he saw no patients between May 31 and September 24, 1903, his income from practice was \$37,155 and from all sources \$47,275, which would correspond to \$266,459 in 1972 terms.

TABLE 2
Sources of Income

Year	Baltimore Period				1972
	Salary	Practice	Book	Total	Equivalent
1890	\$ 5,000	\$ 2,976		\$ 7,926 ¹	\$ 49,286
1891	5,000	2,525		7,525	46,112
1892	5,000	3,523	\$ 1,500	10,023	62,602
1893	5,000	7,570		12,570	76,693
1894 ²	5,000	7,851	8,490	21,341	137,785
1895	5,000	9,687	3,674	18,361	120,576
1896	5,000	10,642		15,642	104,844
1897	5,000	12,796	5,644	23,440	154,653
1898	5,000	19,341	3,301	27,642	176,841
1899	5,000	15,231	4,003	24,234	154,563
1900	5,000	21,622	4,865	31,487	196,084
1901	5,000	27,896	7,182	40,078	239,332
1902	5,000	28,321	6,261	40,282	227,044
1903	5,000	37,155	5,120	47,275	266,459
1904	5,000	33,504	2,134	40,638	225,137
1905	? ³	13,540	2,338	15,878	88,081
	<u>\$75,000</u>	<u>\$254,180</u>	<u>\$54,512</u>	<u>\$384,342</u>	<u>\$2,326,092</u>

¹ In the summary in Volume 1 of the daybooks this figure is given as \$8000.

² The last year listed in the first page of Osler's summary is 1893. The second page of the summary beginning 1894 lists only total income. The subsequent breakdown is made from Osler's summaries at the end of each year. The figure for "book" is for the textbook alone; other royalties he included in "practice" along with interest from savings.

³ The daybook for 1905 does not indicate a salary from Hopkins. \$705 was collected in Baltimore after Osler left. The figure of \$22,566 listed in Osler's later summary included income in England which is shown in Table 3.

It should be remembered that the federal income tax had not yet been instituted. He still was seeing an average of only 5 patients per day with a minimum fee of \$10, but several fees were for \$1000, and one each for \$2000, 2840, 3000, 3471 were paid that year. Osler noted in the day books, "When I left Baltimore in 1905, I had income from investments of less than \$4000 per year." This return conservatively represents capital savings of \$80-100,000 all of which must have been accumulated from his office practice and consultations during his tenure at Hopkins.

The first fee recorded in Oxford was £5 collected two days after his

arrival. In the first year, Osler saw 1-2 patients per day with a maximum of 4 and only 3-5 per week. The largest fee ever recorded was for 16 consultative visits on a lady from New York for which he received \$4000 that was deposited in a bank in Toronto in 1910. During 1913, he was still seeing only 1-3 patients per day, usually 2, with the maximum noted of 5. The minimum fee collected was 2 guineas with many in the £100-150 range, and the largest £525. The summaries of the years in Oxford do not clearly break down his income into fees from practice, royalties, income from the college and students, the small regular stipend from the farms at Ewelme, which he received as a perquisite of his official position, and dividends from investments, which included several railroad stocks. His total income from all sources for 1913 was £7884, which he translated to \$39,420 or \$166,195 in 1972 terms. A note in the day book in May, 1915, states, "One of the busiest 10 days I ever had . . . and made £579." During this year fees were often in the £100-150 range with one patient being charged £300 three times. Later he comments, "It is a curious thing that with much more leisure. . . with less practice I have saved as much in 10 years, more in fact, than in 30 years of previous practice. I left America with (income) about \$3600 from investments which I have increased to above \$10,000" (Table 3). Britain had an income tax by this time.

During the war year of 1916, Osler was seeing only about 3 patients per week. On September 5, six days after his son's death, he saw 2 patients, but only one in each of the next 2 weeks. By September 24, he was back in his regular pattern. The day books for 1918 list few patients seen during the winter, but 1-2 per day during the summer. Apparently the patients seen during the fall epidemic are not listed. His total income for 1918 was £5504 or \$76,382 in 1972 terms. The largest fee was £420. During the last year of his life, he still was seeing 1-5 patients per week. The largest fee for the year was £525 on September 29, but none was recorded for the last patient seen on October 1.

No information was found on the expenses incurred in the operation of his office or for the tremendous amount of travel required to conduct the consultations. His meticulous habit of record keeping has enabled us to get a glimpse of some of the practical aspects of his practice.

By today's definition Osler probably would be classified as a Clinical Professor of Medicine on a part-time appointment, rather than the full-time academic Chairman of a Department. It is doubtful if a consultant in internal medicine today could duplicate his experience, and certainly

TABLE 3
Sources of Income

Year	Salary & Fees	Divi- dends ¹	Books ²	Oxford Period		Total	1972 Equivalent
				Prac- tice			
1905	£158		£ 192		£ 837	\$ 9,026 ³	\$ 50,070
1906	576		1,671		4,590	23,000	124,000
1907	641	941	3,943	£1,943	6,383	32,000	164,527
1908					4,200 ⁴	22,000	109,896
1909					4,505	22,500 ⁵	107,065
1910			2,040		7,813	39,069	176,923
1911					7,210	36,000	165,875
1912	679	1,606	1,522	2,070	5,878	29,400	133,567
1913					7,884	39,420	166,195
1914					5,645	28,225	117,586
1915					6,257 ⁶	31,300	128,868
1916					6,420 ⁷	32,100	122,919
1917					6,000	30,000	97,895
1918					5,504	27,520 ⁸	76,382
1919		620	600		3,650 ⁹	18,250 ⁸	44,093
					£82,776	\$419,810	\$1,785,861

¹ Dividends are not always broken out in the yearly summaries.

² "Books" includes all royalties from writing.

³ This figure cannot be reconciled with the daily entries, unless it included some salary from Hopkins not noted as such.

⁴ The correct figure at the end of the year in the daybook is £4,400. From this time on the yearly summaries do not always break out the sources of income but they follow in general the pattern of the years before.

⁵ This figure is Osler's calculation, but is in error. The figures under "Total" are taken from the summary in the 1874 book.

⁶ The correct figure at the end of the year summary is £6,267.

⁷ The correct figure at the end of year summary is £6,424.

⁸ Osler calculated no figure for this year in the summary. He apparently rounded off £1 at \$5 in previous years and this factor was used.

⁹ Osler made no summary for this year himself. These figures are estimated from daily entries.

the full-time administrative head of an academic department of medicine could not. The question of the amount of private practice necessary for a faculty member in a clinical department to be an effective teacher, how the practice is organized and is used for teaching still has not been answered and remains a subject of active discussion to this day.

Acknowledgment

I would like to express my appreciation to the staff of the Osler Library, McGill University, for making available the original day books which were sealed for 50 years after Osler's death and other materials in manuscript form.

GALEN ON COANS VERSUS CNIDIANS

WESLEY D. SMITH *

The history of medicine in Classical Greece is difficult to write because, while there are many medical treatises that have been passed down to us in the *Corpus Hippocraticum*, they cannot be put in a context or placed in time and space with any precision. I shall do nothing much to help that situation in this paper. On the contrary, I want to point out the sad fact that one of the mainstays for writers of handbooks, and for others who need to have something to say about the early period, is a figment of the scholarly imagination, and probably a pernicious one: that is, the contrast between the medicine of the Coan and that of the Cnidian School. I point it out not to be unkind to those who are trying to make sense of medical history in early Greece, but in the interest of making sounder approaches possible, and of stimulating other lines of thought. I urge that before people fashion any more bricks for the top of that edifice, they take a look at its foundations. That requires a look at Galen, who has been casually cited as offering a basis for the figment, but who does not. First I shall give a brief sketch of the status of the subject. I shall not try to record everyone's opinion, but to show how the vague and false notion "school versus school" has been with us essentially unexamined since modern scholarship on the subject began, and to note that the notion determines what people look for, what they find, and how they talk about it. Because it is unexamined, the notion produces some strange reasoning and simple misrepresentations of the evidence.

There are unmistakable relationships, verbal and conceptual, between many of the treatises of the *Corpus*, and also some striking differences, even antipathies between various works. The aphoristic works have much material in common, so do the gynecological works, so do the works on regimen, and so on.¹ Relationships between groups are less obvious, but can be found and demonstrated. On the other hand, some works seem to criticize the conceptual basis of other works (without naming

* This study was completed at the Johns Hopkins Institute of the History of Medicine under a U.S.P.H.S. training grant of the National Library of Medicine, 1971-72.

¹ References to common ideas and passages abound in Littré's edition (*Oeuvres complètes d'Hippocrate*, 10 vols., Paris, 1853-61; cited hereafter as Littré) and later scholarship has added to the stock, though no systematic collection has been made. The forthcoming Hippocratic Lexicon will help.

them), e.g. *Ancient Medicine* compared with *Regimen* and *Nature of Man*. What one makes of these relationships depends largely on his assumptions and on the questions he is prepared to ask. In the nineteenth century people seemed to know much more about early Greek Medicine than they do in the twentieth. In 1839 Emil Littré, Hippocrates' great editor, was certain that some of Hippocrates' works were known and that others could be related to them as older and younger products of a Coan school of medicine. Littré wrote when Hippocrates and Galen were still influential in medical practice, which made it easier, perhaps, for him to ascribe to Hippocrates and his school what he considered the very best and most scientific of the works, if he could find any grounds for doing so. *Epidemics* 1 and 3, *Prognostic*, *Regimen in Acute Diseases*, and some others he considered undoubtedly by Hippocrates, and he added *Ancient Medicine* as Hippocrates' theoretical scientific treatise. Affinities with those works placed other works in the Coan school. Littré also thought that he could distinguish works which were cruder and more primitive, which did not share the scientific attitude of Hippocrates (which Littré found rather similar to his own): those works, the gynecological works and works on diseases and affections, Littré attributed to Cnidians.² The dichotomy gave room for some eloquent contrasts between the true scientific spirit and its alternatives, a fact which I think accounts for its continuing popularity.

In 1931, after a century of critical scholarly labor had intervened and new evidence had been found (including new treatises by Galen and a medical doxography descended from that of Aristotle's pupil Menon), Ludwig Edelstein summed up what had been a growing scepticism, and pointed out how little actually was known. The more closely one examined the ancient evidence for Hippocrates, his work and his school, the more it tended to dissolve into the conjecture, rumor, and self-serving rhetoric with which people in late antiquity soothed their ignorance of the earlier, Classical period. Hippocrates is, Edelstein concluded, an early physician whose works have been lost, since we cannot connect reports of his doctrine and method from the Classical period with any work extant in the Corpus. Later antiquity, facing the same problem, had made up its Hippocrates out of the works of the Corpus and from romantic notions about the father of medicine, so it appeared. Pursuing his theme, Edelstein pointed out the centrifugal aspects of the works in the Corpus which exist beside their affinities for each other. Still, Edel-

² Littré (vol. 1, pp. 3-26, 440-464, and vol. 7, pp. 304-309) characterizes the schools.

stein did think that there were Cnidian and Coan works in the Corpus, and he included *Regimen in Acute Diseases* among the Cnidian, since it criticizes the *Cnidian Opinions*.³ The history of early medicine became more difficult to write for those who followed Edelstein.

The attempt at reconstruction came from Karl Deichgräber, whose work, based on his 1931 thesis, showed that the various books of the *Epidemics* have affinities with one another and with other works in the Corpus. He offered some plausible arguments for connecting *Epidemics* 5 and 7 with Cos (as well as with Abdera, Thasos, etc.), and also argued that some of the evidence from late antiquity must be trusted if it fits what we think should be the case. He had therefore, so he claimed, identified the works which came from the Coan school, some of which must be by Hippocrates. He awaited the assistance of medical men for writing the history of the school.⁴ He had, as Sigerist observed, brought the subject back to where it was in the time of Littré,⁵ though the personal contribution of Hippocrates was dimmer. The subject has remained fairly static since then.

The other side of the Coan-Cnidian dichotomy had meanwhile been developed by Ilberg in 1925. He followed and developed Littré's themes, and looked for personalities of authors in the Cnidian works which had been identified by Littré. He explained the affinities between extant "Cnidian" works by conjecturing that a Cnidian gynecological archive and the lost work *Cnidian Opinions* by Euryphon, were copied and adapted by authors of the extant works.⁶ One can say that Ilberg and Deichgräber's versions of the subject became the common view among scholars who worked on the material, became "what everyone knows," and that they have not been seriously questioned although much work has been done in recent years on editing and studying individual books of the Corpus.⁷ That *communis opinio* school vs. school has often

³Ludwig Edelstein, "Peri Aeron und die Sammlung der hippokratischen Schriften," *Problemata*, Berlin, 1931, Heft 4, pp. 116-181; also *idem*, "Hippokrates" in Pauly Wissowa *Real-Encyclopädie d. class. Altertumswiss.*, Suppl. VI, cols. 1290-1345.

⁴For his assumption that he has described a school by finding affinities of works, see especially Karl Deichgräber, *Die Epidemien und das Corpus Hippocraticum. Voruntersuchungen zu einer Geschichte der Koischen Aerzteschule* (Abhand. Preuss. Akad. Wissensch. Phil.-Hist. Klasse, Nr. 3. Berlin: Walter de Gruyter, 1933; reprinted 1971), pp. 146-172.

⁵Henry E. Sigerist, "On Hippocrates," *Bull. Inst. Hist. Med.*, 1934, 2: 209.

⁶Johannes Ilberg, "Die Aerzteschule von Knidos," *Berichte Sächs. Akad. Wissensch. Leipzig. Phil.-Hist. Klasse*, 1925, 76. Bd., 3. Heft. Ilberg considered all the extant Cnidian works to be from a younger generation, but the "Kernel" was old Cnidian (p. 25).

⁷Although it is not without bias, a useful account of recent scholarship on the Hippocratic Corpus is given by Hans Diller, "Stand und Aufgaben der Hippokratesforschung,"

so controlled the questions asked by scholars and the data they considered relevant as to make all their results suspect. I can only illustrate that by examples, and I shall do so with two recent, highly respected studies.

Hermann Grensemann, attempting to characterize the writings of Polybus, who, tradition tells us was the student and son-in-law of Hippocrates, dismisses from his consideration some writings anciently attributed to Polybus because they are "known" to be Cnidian works, and asserts that the *Nature of Man* has been proved by scholarship to be Coan.⁸ Further, because Euryphon was reported to have denied the viability of seventh-month children while the work *Eighth Month Child* asserts it, Grensemann concludes that that work (unlike some others that were attributed to Polybus) cannot be Cnidian. From the use of the word *apostasis* in a sense he says is peculiar to Coan works, Grensemann concludes that the work must be Coan.⁹ He presents his results as further characterization of the younger generation of Coans in contrast to Cnidians.¹⁰ His arguments are patently circular and useless unless the rigid schools existed with peculiar and exclusive doctrines.

Another interesting recent study, by I. M. Lonie, on the Cnidian works of the Corpus Hippocraticum is cited by Grensemann for its definition of that school. Lonie investigates the relations between aetiology, symptomatology, and therapy in the "Cnidian" works. On the basis of his findings he conjectures about historical developments: which concepts came first, what changes from primitive to more scientific medicine consist in, and even what influence from the sophisticated dietetics of Cos can be found in Cnidian works beside the more pervasive primitive oriental influence. In describing the Cnidian school Lonie assumes that all of the therapeutic works he calls Cnidian are somehow descended from the one big work *Cnidian Opinions*, which he therefore can reconstruct in outline; if two works have different descriptions of a disease, the fuller, clearer and more orderly (or Lonie's combination of the two) goes back to the source.¹¹ If aetiology for a disease is given in one work and therapy in another, both must have occurred in the

Jahrb. Akad. Wiss. Lit. Mainz, 1959, 271-287. Reprinted in Hans Diller, *Kleine Schritten zur antiken Medizin* (Berlin: Walter de Gruyter, 1973), pp. 89-105.

⁸ Hermann Grensemann, *Der Arzt Polybos als Verfasser hippokratischer Schriften* (Abhand. Akad. Wiss. Lit. Mainz. Geistes- und Sozialwiss. Klasse, Nr. 2. Wiesbaden: Franz Steiner, 1968), p. 59.

⁹ *Ibid.*, pp. 68-70, 72.

¹⁰ *Ibid.*, pp. 94-95.

¹¹ I. M. Lonie, "The Cnidian Treatises of the Corpus Hippocraticum," *Classical Quarterly*, n s., 1965, 15: 1-30; see p. 14 and *passim*.

original.¹² Chapters in an extant book can be seen to have been disarranged, and they can be reordered properly by comparison with the putative order of the hypothetical original source. When the rearrangement is made we can see that it supports the original hypothesis.¹³ This last sounds extreme, and is, I think.¹⁴

Lonie is influenced, as was Ilberg, by an assumption that was very fruitful in the intense period of Quellenforschung in Classical scholarship that began in the late nineteenth century. The great and still influential triumph of the method was Hermann Diels' reconstruction, in *Doxographi Graeci* (1879), of the line of transmission of doxographical information about philosophers. Diels was able to present a reconstruction of Theophrastus' lost work *Physikon doxai* and to prove that it was the ultimate source of many later reports. Thus, after Diels' work, the later reports could no longer be considered independent evidence. Max Wellmann, who had some success with the same method in medical history, suggested in 1910, without argument, that where Cnidian works coincided, the source would be Euryphon.¹⁵ The suggestion was interesting, but no one seriously tried to test it, and for good reason. The farther one gets from "slavish" copying of a dictionary or encyclopedia (such as a doxography), and the more original any author involved in such a transmission, the more complex become the assumptions needed for reconstructing a source, and the more need for careful argument. In effect, Wellmann's suggestion became dogma without benefit of intervening demonstration. I am going to quote from Lonie's explanation of the reasoning behind his study, not to be unkind, but because I need to show how far from the facts his reasoning on the subject begins. He takes his assumptions as demonstrated or demonstrable, but they are neither.

To explain such a peculiar and exasperating state of affairs, only Ilberg's hypothesis of a common stock, itself lost, to which all those works are variously related, will serve. One must go so far with Ilberg.

¹² *Ibid.*, pp. 6-11.

¹³ *Ibid.*, pp. 18-20.

¹⁴ Lonie concludes his article with an outline of the aetiology he finds in the Cnidian works ("Cnidian Treatises," pp. 24-30), and infers that it belongs to the *Cnidian Opinions*. He says (*ibid.*, p. 30), "All the more interesting, then, that it is not the theory ascribed to Euryphon of Cnidus by the author of the Menon Papyrus." He does not explain what his "all the more interesting" means.

¹⁵ Max Wellmann, "Euryphon" in Pauly-Wissowa *Real-Encyclopädie d. class. Altertumswiss.*, vol. 6, col. 1344. Wellmann's *Hippokratesglossare* (Quellen u. Stud. z. Gesch. d. Naturwiss. u. der Med., Bd. 2. Berlin: J. Springer, 1931), which deals with Erotian's sources, is a good example of Quellenforschung in study of ancient lexicography whose results, purely hypothetical, have yet to be seriously examined in print, so far as I know.

This common stock Ilberg found in the *Cnidian Opinions*, criticized by the author of *Regimen in Acute Diseases* and ascribed by Galen to Euryphon (17A 886 K). The grounds for Ilberg's belief were the coincidence of the one fragment which Galen quotes from the *Cnidian Opinions* with *Diseases* 2.68 (7.104 L), and the remarkable correspondence of some of the subdivisions of diseases which Galen quotes, as characteristic of the Cnidian school, from the *Cnidian Opinions*, with the subdivisions which appear in *Internal Affections*.¹⁶

What I have quoted from Lonie contains the following misstatements: 1) that Galen ascribes the *Cnidian Opinions* to Euryphon (Galen does report that people unnamed do ascribe it to him); 2) that the one fragment that Galen quotes from the *Cnidian Opinions* coincides with a passage in *Diseases* 2 (Actually, the only fragment that Galen quotes from it has no parallel in the Corpus. I shall quote that fragment below.); 3) that Galen attributes specific subdivisions of diseases to a Cnidian school (Galen does not, nor had he ever heard of a Cnidian school with distinct doctrines, as I shall show below: Galen made no distinction between the doctrines of Euryphon and those of the so-called Coan school). I hope that the importance of these corrections will become apparent as I proceed to discuss what Galen does say about Euryphon, Cos, and Cnidos.

Galen's most famous and influential remarks, perhaps, are those in his commentary on *Regimen in Acute Diseases*. The author of the work (whom I shall for convenience call "Hippocrates," ugly as the quotation marks are), criticizes the authors of the *Cnidian Opinions* on various counts: they described the experience of the ill in detail but left out much of what the physician should know without the patient telling him; further, "Hippocrates" says that he disagrees with their interpretation of indications for treatment, and he thinks that they use too few remedies (whey and milk and purgatives in most, except for the acute diseases); to use few, he adds, would be good if they were appropriate, but he does not consider them so; he adds that the revisers of the work were more professional in their prescriptions. He says that the "ancients" (reference unknown) neglected regimen. And he says that while "some" knew the many varieties in each disease and the many divisions, they did not give the numbers of each disease correctly, "For perhaps the number will not be easily arrived at, if a person identifies the disease of the patients by

¹⁶ Lonie, "Cnidian Treatises," p. 2. I have translated the titles of the works which he gives in Greek, and I have moved the reference to Kühn (*Claudii Galeni opera omnia*, ed. C. G. Kühn, 22 vols., Lipsiae, 1821-33; cited hereafter as Kühn) into the text from a footnote and used Arabic rather than Roman numerals for book numbers.

this, that one thing is distinct from another if it differs in some way, and a disease is not held to be the same if it does not have the same name" (trans. P. DeLacy).

These are "Hippocrates'" statements on which Galen comments. At the opening of his commentary Galen says that the authors of the *Cnidian Opinions* not only did not leave out what the patient suffers, "but went farther than they should in describing some things, as I shall shortly show."¹⁷ I.e., Galen claims to have information about the *Cnidian Opinions* beyond what "Hippocrates" says about it, and he promises to give that information. Shortly later Galen seems to recur to his promise, though the text is garbled, and at least part of the first sentence is missing:

I said at the beginning that the Cnidians wrote . . . "Seven diseases of the gall bladder," and in the same manner again later, "from the bladder, twelve diseases," and again still later, "four diseases from the kidneys," and again after that, "from the bladder, four kinds of strangury," then later, "three kinds of tetanus," and after that again, "four kinds of icterus," and still later, "three phthyses." The point is that they looked at the varieties of symptoms which change for many reasons and failed to consider the specificity of the dispositions, as did Hippocrates, who used for their discovery a method, only by using which one can find the number of diseases. And this method is described by me at the beginning of the *Therapeutic Method*, is spoken of briefly in *Elements According to Hippocrates*, and in summary account you have my treatise on the *Differentiation of Diseases*.¹⁸

I am not concerned here with discussing the accuracy or consistency of Galen's interpretation of *Regimen in Acute Diseases*, nor with whence he got his information about the *Cnidian Opinions*, but only with the manner in which he characterizes the authors of the *Cnidian Opinions*. What Galen is referring to at the end of the passage quoted above is his own logical method of numbering diseases: four basic diseases from *dyscrasia*, two from *ametria* of pores and corpuscles, and numerous variations on those basic ones.¹⁹ In his work on the *Opinions of Hippocrates and Plato*, in a passage written at about this same time, Galen describes "Hippocrates'" criticism of the *Cnidian Opinions* in this way: "Hippocrates censures the Cnidian physicians for their ignorance of the genera and species of diseases, and he points out the divisions by which what

¹⁷ *Corpus Medicorum Graecorum* (cited hereafter as CMG), 5.9.1, p. 117.

¹⁸ CMG 5.9.1, p. 121-2.

¹⁹ *Differentiation of Diseases* is in Kühn 6, pp. 836-880. Galen probably refers, in the passage quoted, to Kühn 10, pp. 115-117 in *Therapeutic Method* (*Methodus medendi*) and perhaps to ch. 3-5 of *Elements According to Hippocrates* (Kühn 1, pp. 427-457). Cf. Helmreich's notes on the passage, CMG 5.9.2, p. 122.

seems one becomes many by being divided: not only diseases, but everything else, a matter in which one can find the most notable physicians erring even to the medicine they use."²⁰ Galen is arguing that Plato got his logical method from Hippocrates, and that Hippocrates is superior to the most notable physicians of his own time and any time since. He does not tell us anything about the Cnidian authors beyond justifying Hippocrates' criticism by saying that Hippocrates had a logical method.

We return to the commentary on *Regimen in Acute Diseases*, in which, in his comment on the end of the part which he considers genuine, Galen again discusses the Cnidian authors, and sums up his conclusions: what was it that they left out which the physician should know without being told? Those who call Hippocrates a Dogmatic say affected places, dispositions, and causes, Galen says, while those who call him an Empiric say seasons, places, ages, character, and conditions of the atmosphere. But Galen himself would add to these lists of what the Cnidians neglected, temperaments, *dyscrasia*, and the stage of the disease.²¹ It is clear, if one reads Galen's commentary, that he is using the outlook of the authors of *Cnidian Opinions* for a rhetorical contrast with his own reading of Hippocratic science, in much the same way that he uses the Methodists for rhetorical contrast in *Therapeutic Method*. As a result they take on the same coloring. For the supposed Cnidian school, it is important to note that Galen does not say who he thinks the authors or revisers of the *Cnidian Opinions* are, but that elsewhere in his commentary, when he adduces the treatise *Regimen* he gives Euryphon as one of the possible authors.²² I shall come back to that passage below in connection with Galen's various discussions of the author of *Regimen*, but I wish to note here that Galen does not appear to think of Euryphon as the author of *Cnidian Opinions*, nor does he show any suspicion that *Cnidian Opinions* is a comprehensive work from which some of our extant works were derived.

I proceed to the only quotation from the *Cnidian Opinions* which comes down to us, also preserved by Galen. In his commentary on *Epidemics* 6, in a lengthy comment on a passage which lists characteristics of kinds of fevers as they appear to sight and touch,²³ Galen quotes *Cnidian Opinions'* use of *pemphix*, "pustule", in a difficult passage which I shall try to translate: "*Pemphix* is used also in the *Cnidian Opinions*,

²⁰ *Claudii Galeni De placitis Hippocratis et Platonis*, ed. Iwan v. Müller (Lipsiae, 1874), p. 776.

²¹ CMG 5.9.1, pp. 268-270.

²² CMG 5.9.1, p. 135.

²³ Littré 5, p. 274, lines 4-9.

which they attribute to Euryphon the physician: 'He always urinates a little each time, and a pustule comes up, as though made of olive oil, pale, like a spider's web.' They seem to mean by *pemphix* not the whole pustule, but only its margin, which resembles a spider's web."²⁴ Why does Galen say "they" (*houtoi*) when he has just reported that the work is attributed to Euryphon? I do not know. Various conjectures are possible, and the most obvious is that he thought of it as written by "authors" as *Regimen in Acute Diseases* states. In any case, here is our single direct quotation from *Cnidian Opinions*, and it has no parallel in the *Corpus*.

Later in the same comment Galen quotes Euryphon without specifying the work he is quoting, to illustrate *pelios* (livid) fever,²⁵ and afterwards quotes, on the same disease, "the work *Diseases*, inscribed 'by Hippocrates' but which the followers of Dioscurides think was written by Thessalos' son Hippocrates" (i.e., by the grandson of the great Hippocrates).²⁶ What Galen quotes from *Diseases* 2 is very like what he has just quoted from Euryphon, but with slight differences. Here are the quotations side by side in translation for those who have not the joy of reading them in Greek:

Euryphon

Livid fever possesses him, and shivering (*brugmos*) from time to time. There is pain in the head. Pain possesses the intestines and he vomits bile. When the pain possesses him he cannot see, because he is weighted down. The stomach becomes dry, the whole skin livid, the lips as though he has been eating blackberries. The whites of his eyes are livid, and he stares like a man being choked. When this is less severe he alters frequently.

Diseases 2, 7.104.1-7 L.

Livid fever: a dry fever possesses him and shivering (*phrix*) from time to time. There is pain in the head. Pain possesses the intestines and he vomits bile. When the pain possesses him he cannot see, but is weighted down. The stomach becomes dry and the skin and lips livid, the whites of the eyes livid, and he stares like a man being choked. Sometimes his skin changes and becomes pale instead of livid.

²⁴ CMG 5.10.2.2, p. 54. εἴρηται γε μὴν ἡ πέμφιξ, κὰν ταῖς Κνιδίαις (text variant ἰδίαις) γνώμαις, ὥς εἰς Εὐρυφῶντα τὸν [καὶ] ἱατρὸν ἀναφέρουσι, (κατὰ) τήνδε τὴν λέξιν. "οὐρῆει ὀλίγον ἐκάστοτε αἰεὶ καὶ (καὶ καίει, variant) ἐφίσταται πέμφιξ οἷον ἐλαίου, χλωρῇ (χλωρῆς, variant) ὥσπερ ἀράχνιον." εἰκάσι γοῦν οὗτοι πέμφιγα καλεῖν οὐχ ὅλην τὴν φλύκταιναν, ἀλλὰ μόνον τὸ περιγράφον αὐτὴν ἔξωθεν ἀραχνίῳ παραπλήσιον.

οἷον ἐλαίου could, I think, mean "like a bump on an olive tree." I suspect that there is something wrong with the word *χλωρη*. From Galen's comment on the passage we expect something which describes the outside margin of the pustules. Whether Galen's whole report on the use of *pemphix* by *Cnidian Opinions* comes from a dictionary of medical terms, such as Erotian's, is difficult to assert definitely, but it seems likely to me.

²⁵ CMG 5.10.2.2, p. 55.

²⁶ The work Galen quotes is *Diseases* 2 in our present collection. He quotes the work's

On the left, what Lonie (and not only he) takes to be a passage from the granddaddy of all Cnidian works (though Galen does not say so) and on the right a passage from an extant work. Galen quotes both in order to illustrate his text, and does not bat an eyelash at their similarity: he attributes one simply to Euryphon and the other to Hippocrates or his grandson.

In the *Therapeutic Method* Galen has occasion to speak of the physicians of Cnidos and Cos in his introductory chapter,²⁷ a chapter which describes Galen's motives for writing the work and speaks of the low state of taste and morals in his own day as compared with the good old days of long ago. Truth means nothing nowadays, says Galen, only money, flattery, power, food and wine. Thessalus, the founder of the Methodist school of medicine is Galen's example of depravity.²⁸ Thessalus promised to teach medicine in six months, in a work he dedicated to Nero. Because of that promise, shoemakers, carpenters, fullers, smiths have left their proper trade and taken up medicine. Even the vendors of petty wares are in the contest for first place, says Galen.²⁹ He continues:

Wherefore I hesitated to write about therapeutic method, which the ancients initiated and those who followed tried to complete. Even in the old days there was no lack of competition (*eris*) since the physicians of Cos and Cnidus tried to surpass one another by the number of their discoveries. Those were the two tribes of Asclepiads in Asia, not to mention the one from Rhodes. And against them in that good competition that Hesiod praises strove the physicians of Italy: Philistion, Empedocles, Pausanias and their associates. And there arose three remarkable choruses of physicians competing with one another. The Coan chorus was lucky to have the greatest number and best *choreutai* (dancers and singers). Close behind came the one from Cnidus, and that from Italy was of no small account. But none of them ever went to the doors of the rich in the morning to greet them, nor in the evening for dinner. . . . They ever strove to practice, augment and complete the science of Apollo and Asclepius. But now the good *eris* has perished, or a small and attenuated part of it remains among men.³⁰

opening sentence to be specific, since there was confusion about the names of the various therapeutic works in the *Corpus*. "The followers of Dioscurides," may, by Galen's habits of speech, mean Dioscurides himself, in a work unknown to us. Dioscurides lived in the first century A.D. and was responsible for the first scholarly edition of the *Corpus Hippocraticum*.

²⁷ Kühn 10, pp. 1-7.

²⁸ Kühn 10, p. 4-5.

²⁹ Kühn 10, p. 5.

³⁰ Kühn 10, pp. 5-7.

Galen's literary allusions in this passage include, besides Hesiod's *Works and Days*, Plato's *Republic*, which describes justice as doing one's job, and Pindar's dithyrambs, which were sung by choruses who danced for the greater glory of Dionysus and the cities from which they came. Galen carries his literary conceit through Book 1 as he imagines various groups of judges for Thessalus' performance, and promises himself to strive with the muses to write the first good therapeutic method ever written. (This is the passage people usually refer to when they want to prove that there were medical schools in early Greece.)

To this point I have given all the evidence which scholars have used to prove the existence of a Cnidian school discrepant in theory and practice from a Coan. Tribes of scholars, as Galen might say, from France, Germany, New Zealand, etc., have harmonized in an interpretation which has claimed Galen as the source of their opinion, but which has required misrepresentation and wrenching from context to do so. It is true that Galen quotes from Euryphon a passage very like one in *Diseases 2* which he also quotes and is aware of. It is true that Galen attributes to *Cnidian Opinions* categories of diseases similar to those in *Internal Affections*. It is true that Galen speaks of choruses of physicians in Classical Greece striving to outdo one another in discoveries. Now we shall proceed to some more of what Galen says, which will show that Galen did not attribute different theories to Cnidians and Coans (or Sicilians, for that matter), that in Galen's mind Euryphon's medicine was indistinguishable from that of Hippocrates' sons (or the Sicilian Philistion, for another), and that Galen distinguishes Hippocrates as superior to everyone else, but to everyone in similar ways. In virtually every passage I shall discuss we have to wonder what information was available to Galen, and what out of available information he used when he talked about Euryphon and others. But that is a question for another time, which we do not have to answer before we see what view Galen held of Euryphon's medicine and of Cos and Cnidus.

I mentioned before that Galen speaks of Euryphon as a possible author of *Regimen* in his commentary on *Regimen in Acute Diseases*. He does so in another work as well, and in two others gives a briefer list of possible authors which omits Euryphon. The lists are interesting. I shall cite them in what appears to be the order of composition, though all the works I shall cite were probably written within two or three years of 177 A.D.³¹

³¹ My dating is based on the account of Galen's writings by Johannes Ilberg ("Ueber die Schriftstellerei des Kl. Galenos," *Rheinisches Museum*, 1889, 44: 207-239; 1892, 47:

1) In the work *Regimen in Acute Diseases According to Hippocrates*, of which the Greek has been lost, but which is now available in Arabic and English translation,³² Galen describes and defends Hippocrates' doctrine, arguing against a Methodist physician who has given Galen's friend Victor the false view that Hippocrates fed all fever patients daily, and who has said also that if *chondros* had been available Hippocrates would have used it. Galen replies that *chondros* certainly was available, as *Regimen* attests. "Your friend, of course, claims that that work is not by Hippocrates and if you like you can take its author as Philistion or Ariston or Phaon. All of them, without exception, are ancient."³³ Galen continues, to say that *chondros* is mentioned in the poets, and is also mentioned in the treatise *Affections*, which he describes thus: "The author is either Polybus, the most famous of Hippocrates' pupils, or Euryphon, who was also a famous man and a contemporary of Hippocrates."³⁴ (Polybus is of the Coan school, Philistion of the Sicilian, and Euryphon founded the Cnidian, so scholars say.)

2) In the commentary on *Regimen in Acute Diseases* Galen cites *Regimen* again for its use of *chondros*, and says of the work that "they" attribute it to many, Euryphon, Phaon, Philistion, Ariston, but that it is actually the work of the Great Hippocrates.³⁵ (Note that we cannot tell whether this is the same "they" who attribute the *Cnidian Opinions* to Euryphon.)

489-514; 1896, 51: 165-196; 1897, 52: 591-623), as supplemented by Kurt Bardong (*Beiträge zur Hippokrates- und Galenforschung*. Nachr. Akad. d. Wiss. in Göttingen, Phil.-hist. Klasse, Nr 7, Göttingen: Vandenhoeck & Ruprecht, 1942. pp. 577-640). The date of the newly published work, *Regimen in Acute Diseases According to Hippocrates*, must remain somewhat uncertain, since it does not refer to preceding works.

³² CMG Suppl. Or. 2.

³³ Translation of Malcolm Lyons, CMG Suppl. Or. 2, p. 109.

³⁴ Translation of Lyons. Galen's reference to the use of the word *chondros* in *Affections* is to Littré 6.250.15. Galen speaks elsewhere about who wrote *Affections*: he says in the commentary on *Aphorisms* that it is either by Polybus or Hippocrates (Kühn 18A, p. 8); in the commentary on *Reg. in Acut.* he says that the last part of *Reg. in Acut.* is not Hippocrates' work finished for publication, though it may have been left unfinished at his death and published posthumously (CMG 5.9.2, p. 197-8); he concludes, "as a composition it is not worthy of Hippocrates' force (dynamis), just as neither are the books entitled *Diseases* and *Affections*, though they have much good material in them. I will define that and distinguish it in my coming commentaries on those works." The promised commentaries were never written by him. Please note that this statement occurs in the same commentary which is taken by Lonie and others to characterize the Cnidian school, and that the works on *Diseases* and *Affections* are works that Lonie and others take to be the products of the Cnidian School.

³⁵ CMG 5.9.1, p. 135.

3) In the commentary on *Aphorisms*³⁶ Galen cites *Regimen* for its description of lientery and says, "The work is attributed to Hippocrates himself, but some estrange it from him, some attributing it to Philistion, some to Ariston, some to Pherecydes."³⁷

4) In the *Faculties of Foods* (*De alimentorum facultatibus*), a work in which Galen makes much use of *Regimen* for his science of foodstuffs, he says that *Regimen* is ascribed to Hippocrates by some, and also to Philistion, Ariston, Euryphon and Philetas, and that it is found in longer and shorter versions.³⁸ Galen's own view in this work is that Books 2 and 3 of *Regimen* are worthy of Hippocrates, since they contain a methodological approach to the powers of foods, but Book 1 departs from his views (presumably because its elemental theory is unlike what Galen attributes to Hippocrates and accepts as his own).

It is fairly clear to me that Galen read *Regimen* more carefully for citation 4 above, in the work in which he uses it extensively, and that he corrected his rather careless assertion in 2 that it is really Hippocrates' work, which assertion came out of his irritation at the Methodist whom he attacks in citation 1. Whether or not my inference is precisely correct, the above list makes it clear, if it was not so before, that Galen's rhetorical concerns are foremost in any particular work that he is writing, while other things than the point at issue are likely to go out of focus for him. But still he is fairly consistent in the things he says and cites, and for our present purposes his views are quite clear: Euryphon, Polybus, Philistion and others can be associated with the same works by Galen and his sources, and similarly Galen can cite Euryphon and Hippocrates Junior virtually verbatim on a disease without expressing surprise. Whatever we make of these facts we can be sure that the schools are nowhere in Galen's considerations nor in those of his predecessors. Hence we ask how modern scholarship knows the schools so readily and cites Galen as the source of the view.

I shall cite a final example of Galen's view of the *Corpus*. In the work *Abnormal Breathing*,³⁹ written probably in 175 A.D. shortly before the series of works I have cited, Galen goes through various Hippocratic works to prove that their descriptions of abnormal breathing accord with

³⁶ Kühn 18A, p. 8.

³⁷ Cf. note 34 above for Galen's discussion of who wrote *Affections* which just precedes this passage.

³⁸ CMG 5.4.2, p. 212-13.

³⁹ *De difficultate respirationis* (Kühn 7, pp. 753-960). Kurt Bardong, who was preparing an edition of the work for the CMG, dated it at the beginning of 175 A.D.

his own science of the subject for diagnostic purposes. Galen claims that he is original in this science, but in his usual manner he attributes his perceptions also to Hippocrates.⁴⁰ In Books 2 and 3 of the work he demonstrates (not without some special pleading) that all mentions of the subject in *Epidemics* 1-6 (i.e., not only the "most genuine," but the others as well) accord with his science. Further, he says that he could demonstrate the same for all the rest of the books attributed to Hippocrates, and he says,⁴¹ "Since the works of his son Thessalus and his son-in-law Polybus are of the science of Hippocrates, and since what seem to be the works of Euryphon, but are transmitted among the works of Hippocrates, are not very different from them, if I have the leisure I will add a fourth book setting forth what is said about *dyspnoia* in the rest of the books attributed to Hippocrates." Again Galen is not very specific. It is not clear what books he refers to or whence his information comes, but his failure to oppose Coan to Cnidian science is obvious enough.

Euryphon receives brief mention elsewhere from Galen and from other writers of Galen's period, but none affect our subject here and I do not wish to discuss them without adducing their contexts.⁴² The various mentions of Euryphon's medicine include prescriptions, descriptions of treatment in chronic and acute diseases, and gynecological procedures. Galen twice includes Euryphon in lists of great anatomists. Overall, we have the same problem: what was known of him, and what were the sources? The modern myth of Euryphon's stupendous, comprehensive, and orderly *Cnidian Opinions* explains nothing and misinterprets what little Galen knew. Let me at least try to summarize Galen's treatment of the *Corpus Hippocraticum* which, unlike the *Cnidian Opinions*, Galen read and we can read.

Galen was not the first or last to read Hippocrates in his own image and indulge in anachronisms, though he seems more extreme than others. Galen's Hippocrates created elemental and logical theory which Plato copied; he pursued anatomy as the basis of medicine, teleology in the study of organic function, and logical divisions in diagnosis and therapy based on the four elements and qualities. A list of virtually all Galen's works would be needed to illustrate his claims, but most of his claims are made and illustrated in the *Opinions of Hippocrates and Plato*. To

⁴⁰ Kühn 7, pp. 763-4.

⁴¹ Kühn 7, pp. 959-60.

⁴² References can be found in Wellmann, "Euryphon" (n. 15 above), col. 1344. G. Helmreich collects Galen's references to Euryphon in CMG 5.4.2, p. 212.

support his imaginative construction of Hippocratic science, Galen depends on selective quotations from many books of the *Corpus Hippocraticum*, including the very odd works *Humors* and *Nutriments*. Some works in the *Corpus* had been "denied" to Hippocrates on stylistic and perhaps other grounds by Galen's predecessors. While, on the whole, he accepted "their" stylistic judgments, Galen judged Hippocratic science on his own. Some works which are in the *Corpus*, but are not by Hippocrates, offend against the science (see above on *Regimen* 1, and see Galen's commentary on *Prorrhetic*, which treats the work throughout as too empirical). But in Galen's view the works on *Diseases* and *Affections* and the last part of *Regimen in Acute Diseases* do not offend against the science but are inferior in their lack of precise distinctions. They therefore, Galen thought, must have been written by Hippocrates' sons, son-in-law or grandson, or by Euryphon, Hippocrate's great contemporary. Galen himself promised to write commentaries on what he called "Hippocrates' works," *Diseases of Women*, *Nature of the Embryo*, and *Eighth Month Child*, in which he would explain material which is also in *Epidemics* 2.⁴³ Despite all this, scholars can nowadays cite Galen for their notion that there was a Cnidian school, and can treat the gynecology as well known to be Cnidian. Grensemann can dismiss the work *Nature of the Embryo* from his consideration, as Cnidian, while he studies the Coan work *Eighth Month Child*, and can pretend to write about a Coan school that he knows from Galen's testimony.

The scholarly figment "school versus school" is a very easy analogy, which I would conjecture that scholars have made up on the basis of the medical sects of later antiquity, schools which did exist, and which talked about themselves. Galen was perfectly capable of drawing such analogies, but neither he nor his sources drew this one or talked about the existence of medical schools in classical antiquity. Consider a typical example of Galen's use of the analogy: in his commentary on *Prognostic*, where he speaks at the opening of the usefulness of Prognosis, Galen says: "He [i.e. Hippocrates] needed the introduction to this work, though he does not often use introductions, because some people, probably physicians of his time like those now who call themselves Methodists, said that the job of the physician is to guard the health of the healthy and restore it to the sick, but that predicting the future is the job of the prophet."⁴⁴ What an opportunity for Galen, if he held the views that

⁴³ CMG 5.10.1, p. 297. This work by Galen (commentary on *Epidemics* 2) was not known to Littré or Ilberg since the Greek is lost and we have it only in Arabic.

modern scholars do! He could have spoken of symptom therapy or "crude empiricism" of the school or schools that opposed Hippocrates! But Galen ignores the opportunity and all similar ones, as do his sources. Probably, also, Galen was, as an Asiatic Greek, more constantly aware than we that Cnidus is about twenty miles east of Cos.

Scholars who do draw the anachronistic analogy and talk confidently of the "schools" seem to have it both ways. They must, following Deichgräber, assume a continuous tradition "firmly grounded in reality," as they say, to validate their assumption of the existence of the schools. But they must ignore that supposed tradition when working out their own view of the inner relations of the schools and relations between them. Hans Diller has added a new refinement to the curious reasoning thus produced. He argues that the "Cnidian" works must have been in the *Corpus Hippocraticum* early, before the works arrived in the Alexandrian Library. Therefore they must have been contained in a Coan school library (Cnidian works though they be), because no one in Alexandria or later would be so naive as to attribute them to Hippocrates.⁴⁵ I suppose that the *petitio principii* involved is only obvious to one who does not believe him. But he bases his logic on a simple misstatement of facts: he argues that the Alexandrians are unlikely to have accepted as Hippocratic, works which later ages "mit automatischer Sicherheit" judged spurious. But the "automatische Sicherheit" which Diller claims is simply wrong, as my citation of Galen's views about gynecological works⁴⁶ and of his views about works on diseases and affections shows. Diller is an excellent and careful scholar (he does not need my endorsement) but he shares the curious logic that goes with Coan and Cnidian schools. Littré, indeed, knew in the nineteenth century what Diller claims antiquity knew with automatic certainty. But indeed, Galen and his Alexandrian sources did not. In fact they seem to have thought they knew something quite different.

I hope I have made something of a positive statement as well as a negative one. A review of the evidence should itself be stimulating. I have been conscious, while writing this, how difficult it is simply to dispute what "everyone knows," however groundless it is. The Coan and Cnidian schools have generated much prose and many fine observations expressive of historians' concerns. The "schools" have been a

⁴⁴ CMG 5.9.2, p. 197.

⁴⁵ Diller, "Stand und Aufgaben der Hippokratesforschung" (n. 7 above), pp. 271-287; 281.

⁴⁶ CMG 5.10.1, p. 297; cf. also 5.10, p. 344.

self-inflating and self-generating myth: every observation of an affinity between *Diseases 2* and *Internal Affections* or between *Prognostic* and *Epidemics* seemed to add to the certainty. Questions asked in research, and data accepted, have been dictated by the construct and then results thought to support it. The necessity of documentation has been no hindrance once the thing was accepted. Finally, the very material that supposedly brought the myth into being (in this case Galen's statements) was ignored or used very selectively, in a way comparable to Galen's own use of his version of Hippocratic science. In short, we find the same phenomena in scholarship and historical writing as in the material that provides their subject matter: self-validating conceptual systems which resist change and criticism because of the interdependence of their elements, and because they satisfy.⁴⁷ Such phenomena should not surprise us, but always do. And we usually only notice it when other people find their own construct more impressive than the facts on which it presumably rests. We can, I think, follow Aeschylus in saying "Physician and historian, heal thyself," but Aeschylus gives no prescription.⁴⁸

⁴⁷ In reviewing the scholarship on this subject my impression has been that Edelstein did ventilate the subject somewhat. Edelstein's work implied the need for a general reexamination of concepts, which has not taken place. For example, Bardong, in 1939, spoke of the dangerous and depressing despair into which scepticism would lead. He presented Deichgräber's faith in the Coan school as a kind of salvation (*Beiträge zur Hippokrates- und Galenforschung*, p. 603). More recently, Fridolf Kudlien, in a retrospective review of Edelstein as a historian of medicine (*J. Hist. Med.*, 1966, 21: 173-178) appears to conclude that Edelstein's real concerns as a humanist had somehow incapacitated him as a critic of scholarship in medical history. The "young" Edelstein was extreme, though in part influential in his work. Kudlien's estimate fits the pattern of scholarship in the subject from 1931 to the present, and is a sad tribute to Edelstein's work.

⁴⁸ Cf. *Prometheus Bound* 472-5, 507-8.

THE FIELDING H. GARRISON LECTURE *

IN PRAISE OF AMATEURS: MEDICAL HISTORY IN AMERICA BEFORE GARRISON

GENEVIEVE MILLER

There has been a tendency in recent years, particularly among historians who have discovered medical history to be a largely untilled field for research in social or intellectual history, to criticize earlier American physician-historians because they were physician-oriented in their works, or because they approached the subject as bibliophiles or antiquarians who lacked the professional standards of general historiography. Such criticism displays the critics' ignorance of the evolution of medical historiography in demanding that past historians satisfy interests and criteria which have evolved during the intervening years. They are apparently ignorant of the state of medical libraries in this country before the present century, as well as of the reasons why the medical profession wrote its history.

This lecture, dedicated to the memory of Fielding H. Garrison, our first American medical historian to produce a major original work on the general history of medicine, will attempt to interpret American activities in medical historiography in the period between 1856 when two medico-historical books of considerable interest were published and 1913 when Garrison's *Introduction to the History of Medicine* appeared. It was during this time that America's image of its own medical past became fixed, and in which medical men who were scholars and bibliophiles preserved and reinforced the memory of medicine in all past eras. Walton B. McDaniel II in his 1959 Garrison Lecture¹ discussed the major American medico-historical publications during the 19th century, giving an invaluable review of the literature. Here an attempt will be made to examine what forces promoted activity in medical historiography, what subjects were treated, and in what ways historical interests were carried out.

* Delivered at the 46th annual meeting of the American Association for the History of Medicine, Cincinnati, Ohio, May 3, 1974.

¹ Walton B. McDaniel II. "A view of 19th century medical historiography in the United States of America," *Bull. Hist. Med.*, 1959, 33: 415-435; see also his "The beginnings of American medical historiography," *ibid.*, 1952, 26: 45-53.

In 1856 John Watson (1807-1863) of New York published *The Medical Profession in Ancient Times*, a scholarly treatise of 222 pages, part of which he had read as an anniversary discourse before the New York Academy of Medicine the preceding November.² Watson, a leader in organizing the New York Academy of Medicine as well as the American Medical Association and a reformer of the New York Hospital to which he was visiting surgeon, was in addition a book collector, well versed in classical languages. His book was an exposition of ancient medicine through the period of the Roman Empire from a thorough study of the classical source materials then available. For example, he cited the Kühn edition of Galen and Littré's Hippocrates, as well as excerpted medico-legal information from the Code of Justinian which was among his scores of basic source references. His original research placed him, in the opinion of his reviewer Alfred Stillé of Philadelphia, in the same class as the professional historians of his day.³ His purpose was simply "to trace the origin and progress of medicine among the ancients in as succinct a manner as possible consistent with perspicuity; and at the same time to omit nothing of importance or interest in relation to the subject."⁴ The work had been undertaken solely for his own gratification, and he mentioned that he also had material for a treatise on medieval medicine. It is reported that a complete history of medicine was nearly finished when he died in 1863.⁵ Regrettably this was never published. His extensive medico-historical library was given to the New York Hospital and is now in the Lane Medical Library of Stanford University.

By coincidence, the year before Watson's book appeared, another study of ancient medicine, T. L. Wright's *Disquisition on the Ancient History of Medicine*, had been published in Cincinnati.⁶ Wright (1825-1893) of Bellefontaine, Ohio, had recently returned to Ohio from a practice in Kansas City which had included being government physician to the Wyandotte Indians. His book, confined to pre-Hippocratic

² *The Medical Profession in Ancient Times. An Anniversary Discourse Delivered before the New York Academy of Medicine, November 7, 1855* (New York, 1856).

³ *Am. J. Med. Sci.*, 1856, n.s. 32: 417

⁴ Watson, *op. cit.* (n. 2 above), preface, p. iii.

⁵ Howard A. Kelly and Walter L. Burrage. *Dictionary of American Medical Biography* (New York: D. Appleton, 1928), p. 1272. This source was used for biographical details of many individuals mentioned in this paper.

⁶ Thomas Lee Wright. *A Disquisition on the Ancient History of Medicine; Comprising Critical Notices of the Origin of Medical Science, Its Vicissitudes in the Remotest Times, and of Its Reconstruction and Final Establishment by the Greeks* (Cincinnati, 1855).

times, was intended for the general public as well as the medical profession and would have had a sequel if sufficient interest was evinced. Unlike Watson, he had a purpose; he wrote his book to defend the medical profession which was then being maligned: "The 'Young America' ideas — 'the age of progress' — in the modern acceptation of the term, is opposed to the stable foundations of experience. . . . Imposters are encouraged; for their empty vauntings are received as evidence of progress in the age, which agree well with the innate vanity of the times."⁷ For Wright history could demonstrate how true progress had occurred.

The other 1856 medico-historical publication was the translation of Pierre Victor Renouard's *Histoire de la Médecine, depuis son Origine jusqu'au XIX^e Siècle* which had first appeared in Paris in 1846.⁸ The translator was Cornelius George Comegys (1816-1896), recently appointed Professor of the Institutes of Medicine in the new Miami Medical College in Cincinnati. In mid-nineteenth century it was not uncommon for ambitious American physicians to publish translations of European works. What is unusual is that Comegys chose a history of medicine. A native of Delaware and 1848 medical graduate of the University of Pennsylvania who had recently returned from a year of clinical training in London and Paris, Comegys gives us several reasons for his translation. He pointed out that no comprehensive history of medicine existed in print in the English language, although numerous histories were available in French and German. He had evidently overlooked John Bostock's *Sketch of the History of Medicine* with Alison's supplement which had been included in the 6th American edition of J. M. Good's *Study of Medicine* in 1835. It was reissued in Robley Dunglison's revised American edition of Forbes' *Cyclopaedia of Practical Medicine* in 1845, with subsequent printings still available in 1856.⁹

But there were even more penetrating reasons for bringing out a separate comprehensive history of medicine which reflected the current state of American medicine both as a science and as a profession. In 1856 medicine was under attack as a science because of its alleged uncertainty, as evidenced by the differing opinions of its practitioners,

⁷ *Ibid.*, p. 84.

⁸ P. V. Renouard. *History of Medicine, from Its Origin to the Nineteenth Century, with an Appendix, Containing a Philosophical and Historical Review of Medicine to the Present Time*. Translated from the French by Cornelius G. Comegys, M.D. (Cincinnati, 1856).

⁹ See McDaniel, *op. cit.* (n. 1 above), p. 423 for details. It was also reissued in 1905 as part of *A Biographical Cyclopaedia of Medical History* in volume 11 of "The Doctors' Recreation Series," Charles Wells Moulton, editor (Akron, O.: Saalfeld, 1905), pp. 201-367.

and also because, unlike the physical sciences, there seemed to be no evidence of progress in medical knowledge. Comegys defended medicine from the first accusation by pointing out the uncertainty in other professions like theology and law, and argued for medical progress in citing medical discoveries which paralleled the achievements of a Columbus, Copernicus or a Galileo. The optimism of his age and great confidence in science emerge in the following statement:

In what, then, is the progress of this stirring age? . . . It is in mechanics and the chemical and physical sciences, in which our science forms an integral part. Man is struggling to regain what was his primeval inheritance "before the fall brought ruin on our race," when God said, showing him animate and inanimate nature, "Have dominion." We see this in his control of the electrical element, . . . in employing the winds to waft his graceful ships; in the ocean steamer . . . ; in the tunneled mountain, whose icy peaks are reared in vain to barricade the route of his locomotive; in employing the sun's rays to stamp his features on the metallic [sic] plate, that the perfect image of his loved ones may remain long after their frames have mouldered into dust.¹⁰

An even more cogent reason for Comegys to make a comprehensive history of medicine available in America was to demonstrate that "Medicine has never flourished and been cultivated in the highest degree in any country where it has had no legal recognition."¹¹ While America had legalized the medical college and its diploma, the quack or sectarian practitioner had an equal right to practice. Comegys lamented the lack of control of medical practitioners through legislation that would set standards of education and the issuance of licenses by examining boards.

Finally, he asserted that medical history was useful to the physician in the Kantian sense of helping the reason to guide experience in correlating facts. He praised Renouard's history because it related medicine to the civilization of a given time and showed the connection between medical and philosophical theories. While one of Renouard's primary objectives had been to promote the philosophy of medical empiricism through studying the history of medicine, Comegys was primarily interested in using a knowledge of medical history to strengthen American medicine. It was intended to give practitioners critical judgment about opposing medical theories and sects, to provide them with knowledge to defend their profession from attack, and to persuade them to secure firm legal status through state examination.

His translation, to which Comegys added nothing but the somewhat

¹⁰ Renouard, *op. cit.*, translator's preface, p. xi.

¹¹ *Ibid.*, p. xiv.

lengthy preface, received favorable reviews in both England and America. In later years he considered revising it, but never found the time nor energy for the task.¹² Comegys had no further medico-historical publications, but his papers always contained many historical references.¹³ He used historical knowledge to promote his numerous projects in Cincinnati where he was a community leader, and nationally he worked tirelessly to establish a United States Department of Public Health with a secretary of cabinet rank.¹⁴

In 1857, the year after Comegys' translation appeared, the Miami Medical College combined with the Medical College of Ohio, and Comegys continued as Professor of the Institutes of Medicine. In the following year the young John Shaw Billings (1838-1913) entered as a student; after graduating in 1860 he was appointed Demonstrator in Anatomy. This poses the obvious question: did Comegys play a possible role in developing and guiding Billings' interests? A man of broad cultural outlook who later was to propose an academy for Cincinnati similar to the Royal Society of London,¹⁵ in the mid-1850s Comegys was one of the founders of the Cincinnati Public Library. Since Billings does not mention him in any of his reminiscences of Cincinnati days, there was probably not a close personal tie.

A direct link, however, can be established between Billings and John Charles Reeve (1826-1920) of Dayton, Ohio, who in 1860 was appointed Professor of Materia Medica in the same school. In 1859, the year before, Reeve had also published in Cincinnati a translation of a French medico-historical work, Jean-Pierre-Marie Flourens, *Histoire de la Découverte de la Circulation du Sang*, which had appeared in Paris in 1854.¹⁶ Reeve had spent the winter of 1853-54 in London and the

¹² Charles G. Comegys. *Cornelius George Comegys, M.D.; His Life and Career in the Development of Cincinnati for Nearly Half a Century, with Appendix* (Cincinnati, 1899), p. 53.

¹³ For example his *Annual Address before the Society of the Alumni of the Medical Department of the University of Pennsylvania* (Philadelphia, 1875) and his *Plea for a Farmer's Institute* ([Cincinnati], 1883); a student of Charcot, he published a translation of *Lectures on the Pathological Anatomy of the Nervous System. Diseases of the Spinal Cord*. Translated from the Reports of Dr. E. Brissaud, in the *Progrès Médical* (Cincinnati, 1881).

¹⁴ Irving A. Watson, ed. *Physicians and Surgeons of America* (Concord, N. H., 1896), p. 184; see also Morris Fishbein, *A History of the American Medical Association 1847 to 1947* (Philadelphia: W. B. Saunders, 1947), p. 1018.

¹⁵ C. G. Comegys. *Cincinnati, a Plea for an Institute. An Address Delivered before the Historical and Philosophical Society of Ohio, March 29, 1889* (n.p., n.d.).

¹⁶ P. Flourens. *A History of the Discovery of the Circulation of the Blood*. Translated from the French, by J. C. Reeve (Cincinnati, 1859). Reeve's reminiscences are published in *Medical Pickwick*, 1919, 5: 333-338, 366-369, 467-470; 6: 11-13, 49-50.

summer of 1854 at Göttingen, the first of seventeen visits to Europe. He had made his translation because he felt that it was an important part of a student's medical education to have an understanding of the very gradual progress of medical knowledge, warning that "the great discoveries of the future are to be made, like those of the past, by patient and long continued observation, judicious experiment and careful generalization."¹⁷ Since the discovery of the circulation of the blood had been one of the most important advances of medical science, and since neither of the two medical histories in English then available, Renouard-Comegys or Bostock, had discussed it in detail, Reeve had undertaken to fill the gap by translating Flourens' book.¹⁸

He was unquestionably a friend of Billings, for later in life he attended the Billings ceremonial banquet held in Philadelphia in 1895.¹⁹ Was it of any significance for Billings' development that he had studied and worked briefly in a city that had published three books on medical history between 1855 and 1859? It seems reasonable to speculate that in the intellectual milieu of pre-Civil War Cincinnati Billings may have become indoctrinated with ideas and ideals that were to shape his future career. It should be noted also that Robert Fletcher (1823-1912), the bibliographer and scholar who in 1876 became Billings' associate in the Library of the Surgeon-General's Office and eventual Editor of the *Index-Catalogue*, lived in Cincinnati from 1847 until the Civil War.

Curiously, the second and last American translation of a comprehensive European history of medicine in the nineteenth century was also by an Ohioan. A generation later, in 1889, Henry E. Handerson (1837-1918) of Cleveland published a translation of Hermann Baas, *Grundriss der Geschichte der Medicin* of 1876 with extensive additions, particularly on English and American medicine, and many new scholarly annotations

¹⁷ *Ibid.*, translator's preface, p. iii.

¹⁸ Some of the most able American medico-historical studies of the pre-Garrison era were devoted to this subject. Cf. J. C. Dalton, *Doctrines of the Circulation, a History of Physiological Opinion and Discovery, in Regard to the Circulation of the Blood* (Philadelphia, 1884) and John G. Curtis' posthumously published *Harvey's Views on the Use of the Circulation of the Blood, Based on a Lecture Delivered in 1907, before the Johns Hopkins Hospital Historical Club at Baltimore* (New York: Columbia, 1915). Dalton (1825-1889), a disciple of Claude Bernard and one of the first American physiologists, had previously written a historical work on *The Experimental Method in Medicine* (New York, 1882).

¹⁹ *Medical News*, 1895, 67: 641. When writing to Otto Juettner to congratulate him on his book *Daniel Drake and His Followers* (Cincinnati, 1909), he asked why he had not included Billings "whose career certainly adds lustre to your city." J. C. Reeve to O. Juettner, May 27, 1909. Archives of Medical History, University of Cincinnati.

in the footnotes.²⁰ Unlike Comegys and Reeve, Handerson had never visited Europe, but like Watson he was basically a scholar, well trained in classical languages and literature before he made medicine his profession. He represented a type of physician-scholar-bibliophile of which William Osler has become the most publicized example.

Handerson offered no special reason for making Baas' work available in English except to make it useful, and "to present to the American medical profession a treatise on the history of medicine neither so superficial and 'sketchy' as to disappoint, nor yet so voluminous and philosophical as to weary the reader."²¹ He was interested in history for its own sake, as an independent scholarly discipline based upon skills in language and philology. The European model had shifted from France to Germany. In the thirty-three years between Comegys and Handerson the American medical scene had altered considerably, and the defensive attitude had disappeared.

Handerson's interest in medical history dated back to the days of his residence in New York City where he had studied medicine at the College of Physicians and Surgeons immediately after the Civil War and settled down to practice. In 1878 he read a paper on "The School of Salernum, an Historical Sketch of Mediaeval Medicine" to the Medical Society of the County of New York. Published five years later as a sixty-page pamphlet²² it established his reputation as a highly competent historian, facile in Latin and thorough in his research. Physicians with classical training were not uncommon at that time. Handerson, with an M.A. from Hobart College before the Civil War, had amused himself as a war prisoner by reading Herodotus and Tacitus in the original, just as James E. Pilcher (1857-1911), a career Army surgeon, translated Mondinus' *De anathomia* to avoid boredom during a long winter while stationed at Fort Custer, Montana.²³

The stimulus to translate Baas' work may have come from a review published in the *Virginia Medical Monthly*²⁴ by George Reuling, a German ophthalmologist who had settled in Baltimore after the Civil

²⁰ Johann Hermann Baas. *Outlines of the History of Medicine and the Medical Profession*. Translated, and in Conjunction with the Author Revised and Enlarged, by Henry E. Handerson (New York, 1889).

²¹ *Ibid.*, translator's preface.

²² New York, 1883.

²³ Kelly and Burrage, *op. cit.* (n. 5 above), p. 969; for biographical details about Handerson see *Yankee in Gray, the Civil War Memoirs of Henry E. Handerson*, with a Biographical Introduction by Clyde Lottridge Cummer (Cleveland, O.: Western Reserve, 1962).

²⁴ *Virginia Med. Monthly*, 1876/77, 3: 379-381.

War. Recommending that the book should be "speedily translated into English," Reuling prophesied that if the work were well done, it would "soon become a most valuable text-book in our colleges and universities." In a presentation copy of the Baas-Handerson book now in the Cleveland Health Sciences Library Handerson had copied out part of Reuling's review. Among Handerson's few preserved papers are several letters from Baas written shortly before and after the translation was published. They show that there was close collaboration between the two; Baas sent his revisions for incorporation into the English translation, inspected the proofs, and later consoled Handerson because the book was selling so poorly.²⁵

Handerson was in touch with the major figures of the German-speaking medico-historical world. In 1899 he contributed an article on Thacher's *Brief Rule*, America's first medical publication, to *Janus*, the only medical history journal then in existence.²⁶ Correspondence has been preserved from Max Neuburger, Felix von Oefele, and Karl Sudhoff who wrote as follows of the Baas-Handerson work: "We all recognize without envy that your book is the best presentation up to the present time of the history of the healing art which encompasses the whole world literature. None of the outstanding characteristics of Baas' book are lost and much new is added."²⁷ Handerson's book was *the* textbook of medical history at the turn of the twentieth century and was reissued in New York in 1910.²⁸

Meanwhile in the years between Watson, Comegys, and Handerson what had other Americans been doing? The single general history of medicine published in this period was an anomaly in that it did not arise from the current medical situation. In 1872 Richard J. Dunglison published his father Robley Dunglison's lectures on medical history which had been given at the University of Virginia forty years earlier.²⁹

²⁵ Genevieve Miller. "Henry E. Handerson's German correspondents, letters of Baas, Sudhoff, Oefele," *Medizinhistorisches Journal*, 1971, 6: 45-49. Details of the financial arrangements are not known, but probably Handerson had paid the publication costs, as Comegys had done in 1855. Cf. *Ohio Med. & Surg. J.*, 1855, 8: 150.

²⁶ *Janus*, 1899, 4: 540-547.

²⁷ "Wir erkennen alle neidlos an, dass Ihr Werk 'bis heute die beste Darstellung der Geschichte der Heilkunde bildet, welches in gleichem Umfange die Weltliteratur besitzt. Keiner der Vorzüge des Baas'schen Werkes ist verloren gegangen und mancher ist neu hinzugekommen." Miller, *op. cit.*, p. 50.

²⁸ New York: William R. Jenkins, 1910. It was again reprinted in 1971 by Robert E. Krieger.

²⁹ Robley Dunglison. *History of Medicine from the Earliest Times to the Commencement of the Nineteenth Century* (Philadelphia, 1872).

Based upon the older works of John Freind and Kurt Sprengel, it added nothing new to the literature. Another anomaly was the New Jersey lawyer George F. Fort's (1843-1909) work on *Medical Economy during the Middle Ages, a Contribution to the History of European Morals, from the Time of the Roman Empire to the Close of the Fourteenth Century* (New York, 1883), a curious work based on medieval medical, legal, and religious texts which seems to have had little or no impact on medical historiography.³⁰

Whitfield J. Bell, Jr., in his masterful Presidential Address last year, told us about Joseph M. Toner (1825-1896) of Washington, D.C., the indefatigable collector of medical Americana who in 1882 gave his collection of books, pamphlets, and clippings to the Library of Congress.³¹ Although his projected biographical dictionary of American physicians was never completed, he collected data for over 4,000 physicians by sending out questionnaires all over the country, and he had clerical assistants cull local newspapers for medico-historical items. In his various publications in the 1870s on American colonial and Revolutionary War medicine Toner attempted to reconstruct America's medical past. He was not alone, for it was in this period that America's medical heroes were established. In the early 1850s Samuel David Gross (1805-1884), then Professor of Surgery at the University of Louisville, had created Ephraim McDowell's status in medical history by extensive local research,³² just as years later Otto Juettner of Cincinnati recreated Daniel Drake when he had nearly been forgotten in his own community.³³ The tireless Gross, while carrying on a busy career of teaching and practicing surgery and writing surgical textbooks, also found time to edit the *Lives of Eminent American Physicians and Surgeons of the Nineteenth Century*, published in Philadelphia in 1861. Medical biography was in the forefront in the nineteenth century, not surprising when Thomas Carlyle was making biography the essence of history.³⁴

As the Nestor of both the American Medical Association and the American Surgical Association, Gross was President of the International

³⁰ See the comments of W. B. McDaniel, *op. cit.* (n. 1 above), pp. 431-432.

³¹ "Joseph M. Toner (1825-1896) as a Medical Historian," *Bull. Hist. Med.*, 1973, 47: 1-24; abridged version in *J.A.M.A.*, 1973, 224: 107-111.

³² S. D. Gross. *Report on Kentucky Surgery, Read before the Kentucky State Medical Society* (Louisville, 1853), cited in *Index Catalogue* (Washington, 1926), third series, VI, 268.

³³ *Daniel Drake and His Followers; Historical and Biographical Sketches, 1785-1909* (Cincinnati: Harvey, 1909).

³⁴ For further comment see Whitfield J. Bell, Jr., "Lives in medicine: the biographical dictionaries of Thacher, Williams, and Gross," *Bull. Hist. Med.*, 1968, 42: 114-120.

Medical Congress held in Philadelphia during the Centennial Exhibition in 1876 which generated historical studies of all aspects of American life. A series of essays on American medicine in the *American Journal of the Medical Sciences* by Gross, Edward H. Clarke, Henry J. Bigelow, T. Gaillard Thomas, and John Shaw Billings which was republished as the volume *A Century of American Medicine* helped to etch the main outlines of American medical history.³⁵ The celebration of the Centennial was responsible for N. S. Davis' *Contributions to the History of Medical Education and Medical Literature in the United States of America 1776-1876* (Washington, 1877), a special report prepared for the U.S. Bureau of Education, and probably also for H. E. Brown's *Medical Department of the United States Army from 1775 to 1873* (Washington, 1873) and his *Medical Men of the Revolution* (Philadelphia, 1876). Gross' valuable 85-page *History of American Medical Literature from 1776 to the Present Time* (Philadelphia, 1875) contains much more than a discussion of literature, and like many other historical essays of the nineteenth century originated as an introductory lecture to a new class of Jefferson Medical College students.

The period also produced numerous county and state histories such as Sylvester D. Willard's *Biographical Memoirs of Physicians of Albany County* (Albany, N.Y., 1857) and *Annals of the Medical Society of the County of Albany, 1806-1851* (Albany, 1864); George Jackson Fisher's *Biographical Sketches of the Deceased Physicians of Westchester County, N.Y.* (New York, 1861); J. Henry Clark's *The Medical Men of New Jersey in Essex District from 1666 to 1866* (Newark, 1867); Stephen Wickes' *History of Medicine in New Jersey* (Newark, 1879); *Early Medical Chicago: an Historical Sketch of the First Practitioners of Medicine in the City* (Chicago, 1879); Samuel A. Green's *History of Medicine in Massachusetts* (Boston, 1881); and G. W. Norris' *The Early History of Medicine in Philadelphia* (Philadelphia, 1886). John R. Quinan's *Medical Annals of Baltimore, from 1608 to 1880* (Baltimore, 1884) originated in the Medical and Chirurgical Faculty's 1880 celebration of the sesquicentennial of the founding of Baltimore for which Quinan was given the task of recording the "Physicians of the City." He became so interested that a 274-page book resulted.

Similarly, histories of hospitals and medical schools were generated by anniversaries, e.g. Joseph Carson's *History of the Medical Depart-*

³⁵ *Am. J. Med. Sci.*, 1876, n.s. 71: 127-184, 431-484; 72: 133-170, 439-480; republished collectively under the title *A Century of American Medicine 1776-1876* (Philadelphia, 1876).

ment of the University of Pennsylvania (Philadelphia, 1869), J. C. Dalton's *History of the College of Physicians and Surgeons of the City of New York* (New York, 1888), and N. I. Bowditch's *History of the Massachusetts General Hospital* (Boston, 1851; 2d ed. with a Continuation to 1872, Boston, 1872). The six-volume *Medical and Surgical History of the War of the Rebellion* (Washington, 1875-1888) was, of course, written for very practical military reasons.

There were also the book collectors. While Billings was developing the library of the Surgeon General's Office, individual physicians were building collections which they eventually gave to help develop academy or medical school libraries. In 1889 Oliver Wendell Holmes (1809-1894) presented over a thousand volumes to the Boston Medical Library Association after he retired as the first President³⁶ just as Henry Handerson in the late 1890s gave his rare book collection of several thousand volumes to the Cleveland Medical Library Association of which he was a founder in 1894. S. Weir Mitchell (1829-1914) helped to make the Library of the College of Physicians of Philadelphia the most outstanding in the country in those years, with the help of individuals like Samuel Lewis (1813-1890), the Barbados-born Philadelphia collector who, after his initial gift of 2500 volumes in 1864, brought the total to more than ten thousand before he died in 1890.³⁷ His library included an extensive collection on the School of Salerno, a subject about which there was considerable interest in this period. Even before Handerson's 1883 publication, John Ordronaux (1830-1908), Professor of Medical Jurisprudence at Columbia and the country's leading medico-legal expert, in 1870 made the *Regimen Sanitatis Salernitanum* available to the American public in a new English translation.³⁸ Years later he related to the Johns Hopkins Historical Club the circumstances behind the translation. Early in the Civil War at a dinner party given by John W. Francis (1789-1861), classical scholar and physician of New York, during the course of a conversation with an English colonial bishop on the merits of the poem, Ordronaux was urged by Francis to make a new translation. The task was formidable. His first translation "in lyrical measure" was condemned by his friend and neighbor William Cullen Bryant and also

³⁶ Henry R. Viets, "Oliver Wendell Holmes: his books," *Bull. Hist. Med.*, 1964, 38: 530-533.

³⁷ *Ibid.*, p. 741.

³⁸ *Regimen Sanitatis Salernitanum. Code of Health of the School of Salerno*. Translated into English Verse, with an Introduction, Notes and Appendix (Philadelphia, 1870).

by Oliver Wendell Holmes as being "incongruous with the nature of the poem;" his second effort completed a year later satisfied both.³⁹

George Jackson Fisher (1825-1893) of Ossining, New York, not only collected medical classics but also wrote about them and their authors. Over a period of three years, from 1880 to 1883, in the *Annals of Anatomy and Surgery* of which his young friend James E. Pilcher, was editor, Fisher published a series of sketches of the lives, times, and works of the old masters of anatomy and surgery embracing 365 pages altogether in twenty-two installments, a forerunner of Henry Sigerist's *Great Doctors*.⁴⁰ Beginning with Vesalius, and not arranged in any apparent order, twenty-three great figures from Hippocrates to Harvey were presented in a form which included not only gracefully written biographical information but a bibliographic description of the principal editions of their works. Fisher's articles were not those of an unsophisticated amateur, for they show a familiarity with the most recent European research and research tools. Although his chapter on the history of surgery at the end of John Ashhurst's *International Encyclopaedia of Surgery*, published in 1886,⁴¹ was dependent upon Kurt Sprengel's *Geschichte der Chirurgie* for the main outlines, it shows that Fisher actually read and made critical comments on the surgical portions of authors like Hippocrates and Celsus, as well as of later 16th and 17th-century texts which he had in his own library. His collection of more than six thousand medical classics and incunabula was well known to bibliophiles and eventually was purchased by the Library of the Medical Society of the County of Kings in Brooklyn. He also collected medical medals and portrait engravings, the latter now preserved at the Welch Medical Library after having been purchased by Howard A. Kelly for the Johns Hopkins Hospital Library.⁴² Fisher's own feeling about his books is delightfully expressed in an obituary which he wrote about his friend John Foster Jenkins (1826-1882) of

³⁹ *Med. Library & Hist. J.*, 1904, 2: 50-52.

⁴⁰ George Jackson Fisher. "Historical and biographical notes. A series of sketches of the lives, times and works of some of the old masters of anatomy, surgery, and medicine," *Ann. Anat. & Surg.*, Brooklyn, 1880-1883, *passim*. A collectively bound copy is in the National Library of Medicine.

⁴¹ "A History of Surgery," *International Encyclopaedia of Surgery* (New York, 1886), vol. VI, pp. 1146-1202.

⁴² Wesley Draper, "Merger in Brooklyn: The Academy of Medicine and the Downstate Medical Center Libraries," *Bull. Med. Library Assoc.*, 1963, 51: 169; Archibald Malloch. "A Century of American Medical Libraries, 1830-1930," *Celebration of the Centennial of the Library of the Medical and Chirurgical Faculty of the State of Maryland 1830-1930* (Baltimore: Medical and Chirurgical Faculty, 1931), p. 7; Audrey W. Davis, *Dr. Kelly of Hopkins, Surgeon, Scientist, Christian* (Baltimore: Johns Hopkins, 1959), p. 98.

Yonkers, New York, who was also a collector. Writing of "bibliomania," he said:

It brought an ample compensation in the way of pleasant diversion for spare hours, and in interesting and elegant culture otherwise unattainable. Perhaps it would be better for the profession if this sort of diversion was more frequently resorted to. More than once I have said, though my books were burned as a funeral fire,—gentle reader do not conclude from this that I am an advocate for cremation of the body, or of incineration of books,—they have served a purpose to me, quite equal to their commercial value. I shall never forget with what zest we pursued our historical and biographical researches, with a view to ascertain the period and state of times in which our authors flourished, the prevailing medical opinions of their era, their contributions to theory and fact; in short, the nature and extent of their labors and even the particulars relating to their personalities. Thus we learned the story of our profession, and traced the gradual evolution of the science and art of healing.⁴³

Another collector who has been forgotten is John Stockton Hough (1845-1900), a versatile physician of independent means who on his estate near Trenton, New Jersey, assembled a historical library of ten thousand volumes including 150 medical incunabula. An 1868 graduate of the University of Pennsylvania Medical Department, Stockton Hough had practised medicine in Philadelphia only a few years before making, in 1874, the first of many trips to Europe to study the methods of various universities and to collect books. In 1878 he sent to booksellers throughout the world some two thousand printed leaflets listing his desiderata. He was interested in books on human reproduction but soon began to collect the history and bibliography of medicine also.⁴⁴

Stockton Hough was probably the first person in America or Europe to prepare a checklist of medical incunabula with the intention of publishing an international union catalogue. In the National Library of Medicine is a copy annotated in his hand of a printed preliminary *Incunabula Medica (Prodromus Bibliographicus)*⁴⁵ which he had had printed in

⁴³ G. J. Fisher. "A memorial sketch of the life and character of the late John Foster Jenkins," *Trans. Med. Soc. State of New York*, 1884, 369-387. Quotation is on p. 20 of reprint. Fisher also stimulated the surgeon Lewis Stephen Pilcher of Brooklyn to become a collector. See the delightful description of Fisher in *A Surgical Pilgrim's Progress, Reminiscences of Lewis Stephen Pilcher* (Philadelphia. J. B. Lippincott, 1925), pp. 337 ff.

⁴⁴ The Library of the College of Physicians of Philadelphia has his marked copy indicating titles obtained up to 1886. In a listing of private libraries in 1894, Stockton Hough's library is described as being devoted to the history and bibliography of medicine, human generation, laws of production of sex, human monsters, early medical literature, 15th century bibliography. *Export-Journal*, 1894, no. 98, vol. 8, no. 5 (Clipping in Stockton Hough scrap-book *Opera Minora*).

⁴⁵ The full title was *Incunabula Medica (Prodromus bibliographicus) directorium bibli-*

100 copies and sent to large public libraries in America and Europe in 1889 in order to obtain information about their holdings. On January 1, 1890, he also distributed the first issue of *Bibliotheca Medica Historico-Literaria et Bibliographica* which was intended to be a weekly periodical devoted to the bibliography and history of the literature of medicine.⁴⁶ The first number contained facsimile reproductions of the title pages and detailed bibliographical information, in French, of Johannes Peyligk's *Compendium philosophiae naturalis*, 1499, and Magnus Hundt's *Antropologium de hoīs dignitate, natura et proprietatibus de elementis, partibus, et membris humani corporis*, 1501. The eleven-page publication also contained reproductions of illustrations which were common to the two books. Evidently it did not receive a sufficient number of subscriptions, for only one issue appeared. His bibliographical efforts attracted the attention of scholars abroad, for eighteen years later Feyfer, the editor of *Janus*, in reviewing Sudhoff's *Deutsche medizinische Inkunabeln*, the first scholarly treatise on medical incunabula, mentioned Stockton Hough's publication as having been "dealt with in an excellent manner."⁴⁷ His world directory of medical incunabula was also never completed.

Stockton Hough shared his treasures with audiences in New York and Philadelphia. He spoke to the Grolier Club in New York on Canevarius, a French collector of books with artistic bindings whose life and activities he planned to publish.⁴⁸ In Philadelphia on April 7, 1894, he gave a paper on medical incunabula to the Philobiblon Club meeting at the residence of William Pepper. Shortly afterwards his collection received publicity when from April 18 to 21 fifty of his incunabula were exhibited at the Free Library of Philadelphia.⁴⁹ He loaned at least one book to John Shaw Billings.⁵⁰ One wonders what was behind the cryptic statement on a postcard to Abraham C. W. Beecher, "I had a letter from

othecarum cum nominibus et locis earum quae viginti vel plura medicorum librorum quinto decimo saecula typis excusorum exemplaria continent, in alphabetico auctorum ordine dispositum (Trentonii: in Novo-Caesarea, 1889).

⁴⁶ *Bibliotheca Medica Historico-Literaria et Bibliographica. A Weekly Periodical Devoted to the Bibliography and History of the Literature of Medicine by Dr. Stockton-Hough*. Vol. I, no. 1 published by the author at Trenton, New Jersey, Jan. 1, 1890, 11 leaves.

⁴⁷ *Janus*, 1908, 13: 539.

⁴⁸ Prospectus of "Demetrius Canevarius, sa vie, ses oeuvres, son testament et sa bibliothèque" par M. Le Dr. Stockton-Hough. Chez l'auteur (Trenton, New Jersey, 1890). Copy in National Library of Medicine.

⁴⁹ Scrap-book *Opera Minora*.

⁵⁰ Note on back cover of *Notebook Catalogue of the Medical Library of John Stockton-Hough of Trenton, N.J.*: "Greenhill Adversaria loaned to Dr. Billings, Oct. 1886" (Library of College of Physicians of Philadelphia).

Billings—who wants to know ‘If I can let up a little’—says he expected he it [sic] would hurt me *some*—He no doubt thought I needed discipline—I have not done with him yet.”⁵¹

An enthusiastic newspaper reporter has given us a colorful account of a visit to Stockton Hough’s library, described as

a large cheerful room in terra cotta, with an open fire place, luxurious chairs, handsome, crowded book cases, and pictures and relics, the result of Dr. Hough’s fourteen trips across the Atlantic. . . . If the Doctor was interesting by sunlight as his face brightened in telling the story of—not himself—but his work in hand, he became doubly entertaining by the light of a candle after he had conducted the reporter into his fire and burglar proof vault in which he keeps his rarest works, . . . [many of which] have survived in a faultless condition and are kept in separate cases, wrapped in cotton, and handled with only the greatest care.⁵²

After his death in 1900 his medical books consisting of 3247 volumes and 2070 pamphlets were purchased by the College of Physicians of Philadelphia which sold off the duplicates to the library of the University of Pennsylvania.⁵³ William Snow Miller of Wisconsin obtained a number of the biographies and bibliographies and commented that “the marginal notes and additions to the works on medical bibliography in the handwriting of Dr. Hough show that he was more than a mere collector of old and curious medical works, he was a profound student of books and of the times in which they were written.”⁵⁴

In the 1880s and 1890s there were a score of medical book collectors, most of them very knowledgeable. The activities of Billings and of William Osler have been described so many times that the impression is frequently given that they were unusual in their bibliographic interests. Probably a more correct view is that they brought to a focus activities which were already going on, being outstanding among many who shared the humanistic values and ideals of the last quarter of the nineteenth century. These included Nicholas Senn (1844-1908), the leading surgeon of Chicago, who gave his large collection of surgical classics as well as the library of DuBois-Reymond to the Newberry Library in Chicago;⁵⁵ Beriah André Watson (1836-1892) of Jersey City, N.J.; Lewis

⁵¹ Manuscript Collection, Library of College of Physicians of Philadelphia.

⁵² *The Trenton (N.J.) Times*, Feb. 22, 1894.

⁵³ Charles Perry Fisher, “Library of the College of Physicians, Philadelphia,” *Bull. Assoc. Med. Librarians*, 1902, 1: 43-44.

⁵⁴ Kelly and Burrage, *op. cit.*, p. 603.

⁵⁵ DuBois-Reymond’s library was acquired by Senn in 1897 (*J.A.M.A.*, 1897, 28: 563); cf. also *The John Crerar Library, a List of Books Exhibited, December 30, 1907-January 4, 1908, including Incunabula and Other Early Printed Books in the Senn Collection* (Chicago, 1907)

Stephen Pilcher (1845-1934) of Brooklyn, brother of James E. Pilcher and editor of the *Annals of Surgery* for fifty years, whose collection is now at the University of Michigan; ⁵⁶ Horatio Robinson Storer (1830-1922) of Boston who in 1878 started his famous medal collection now in the Countway Library; ⁵⁷ Samuel D. Gross, Alfred Stillé (1813-1900), and W. W. Keen (1837-1932) of Philadelphia; ⁵⁸ Howard A. Kelly (1858-1943) of Philadelphia and Baltimore; Levi Cooper Lane (1830-1902) of San Francisco; Rudolph Matas (1860-1957) and Joseph Jones (1833-1896) of New Orleans whose rich collections on public health, infectious diseases, and southern medical journals were purchased for the Library of the Medical Society of the County of Kings in Brooklyn; John Foster Jenkins of Yonkers whose choice library was sold in over 1,800 lots after his death for less than \$4,000; ⁵⁹ William H. Mussey (1818-1882) of Cincinnati; James Moores Ball, Jr. (1862-1929) of St. Louis; George Dock (1860-1951) of Ann Arbor, New Orleans, and St. Louis who was probably responsible for the purchase of Julius Pagel's medico-historical library by Washington University School of Medicine in 1912 and who late in life helped to develop the historical section of the Los Angeles Academy of Medicine Library; ⁶⁰ Constantine Hering (1800-1880), the Philadelphia homeopathist who built up an extensive

cited in *Mitteilungen zur Geschichte der Medizin und der Naturwissenschaften*, 1911, 10: 185. Many of the incunabula had come from the library of Professor Wilhelm Baum of Göttingen.

⁵⁶ Lewis Stephen Pilcher. *A List of Books by Some of the Old Masters of Medicine and Surgery, Together with Books on the History of Medicine and on Medical Biography in the Possession of Lewis Stephen Pilcher, with Biographical and Bibliographical Notes and Reproductions of Some Title Pages and Captions* (Brooklyn, N.Y.: [Privately Printed], 1918.

⁵⁷ Given to the Boston Medical Library in 1900, the collection numbered 2300 pieces and was only surpassed in size by those of Dr. Joseph Brettauer of Trieste and of the Army Medical Library in Washington. James R. Chadwick, "The Boston Medical Library," *Med. Library & Hist. J.*, 1903, 1: 132.

⁵⁸ Among other gifts Keen in 1908 presented the Library of the College of Physicians of Philadelphia with 33 rare volumes "of which twenty-two were printed in the fifteenth century." *Aesculapian*, 1909, 1: 273.

⁵⁹ Kelly and Burrage, *op. cit.*, p. 660.

⁶⁰ George Dock. "Julius Pagel and the Pagel Collection of Books on the History of Medicine in the Washington University Medical School," *J. Missouri State Med. Assoc.*, 1913, 9: 1-11; also in *Bull. Med. Library Assoc.*, 1913, n.s. 3: 21-25. The library was purchased for 16,000 Marks (*Mitt. z. Gesch. d. Med.*, 1913, 12: 274). Dr. Dock was also responsible in 1915 for obtaining the William Beaumont papers for Washington University. See Irwin H. Pizer, "Source materials and the library: the dispersion of the Beaumont papers," *Bull. Med. Library Assoc.*, 1964, 52: 333. For biographical details see George R. Burns, "Men of medicine, a gifted and inspiring teacher," *Postgraduate Med.*, 1950, 8: 325-330.

Paracelsus collection;⁶¹ John Uri Lloyd and his brothers, the pharmaceutical manufacturers of Cincinnati,⁶² and doubtless many others.⁶³ Book collecting was equated with gentility in Victorian society. A review in *The Nation* of the first volume of the famous *Index-Catalogue* related how surprised a visiting French scholar was to see the great interest shown in America in bibliography as well as in collecting. "He was told that it was because Americans of the Brahmin or reading caste enjoy literature so much that they take pleasure in all that is connected with books, like to read about them as well as to read the volumes themselves, and taste the pleasures of a collector at the expense of time alone."⁶⁴

During the same time that Billings was making the Surgeon General's Library as complete as possible, Samuel Smith Purple (1822-1900) was building up the Library of the New York Academy of Medicine. Inspired by John B. Beck (1794-1851), a collector who had written a history of American medicine before the Revolution⁶⁵ and who had stressed the importance of preserving the early American literature, much of which was in pamphlet form, Purple tirelessly collected for the Academy, of which he was President from 1875 to 1878. At his own expense he sought to obtain complete sets of every American medical periodical that had ever been published. As Stephen Smith wrote, "For more than a quarter of a century he ransacked every collection of old pamphlets accessible to him in this and other cities."⁶⁶ He also collected medical

⁶¹ Constantine Hering. *Catalogue of a Very Rare and Curious Collection of the Different Editions of the Works of . . . Paracelsus, together with Several Hundred Commentaries and Translations during Fifty Years* (Philadelphia, 1881). Owned by the Hahnemann Medical College, this collection is now housed in the Library of the College of Physicians of Philadelphia.

⁶² Corinne Miller Simons. "Lloyd Library," *Cincinnati J. Med.*, 1972, 53: 185-188.

⁶³ Dr. Whitfield J. Bell, Jr., has generously supplied these names of other 19th-century medico-historical collectors: Ebenezer Alden (1788-1881) of Randolph, Mass., Samuel A. Green (1830-1918) of Boston, William K. Gilbert of Philadelphia, Ellsworth Eliot of New York, W. A. M. Wainwright of Hartford, Conn., John R. Quinan (1822-1890) of Baltimore. I have purposely omitted those collectors whose activities began around the turn of the century or later, e.g. Henry Barton Jacobs, LeRoy Crummer, E. C. Streeter, Herbert M. Evans, Harvey Cushing, Arnold C. Klebs, Horace Manchester Brown, or Casey Wood.

⁶⁴ *The Nation*, Sept. 22, 1881. George Rosen discussed the cultural value of medical history in America in his comprehensive essay "The place of history in medical education," *Bull. Hist. Med.*, 1948, 22: 616 ff.

⁶⁵ John B. Beck. *An Historical Sketch of the State of American Medicine before the Revolution* (Albany, 1842).

⁶⁶ "Memorial address on the late Samuel Smith Purple, M.D. Delivered before the New York Academy of Medicine, May 16th. 1901," *Med. Library & Hist. J.*, 1903, 1: 113.

portraits with the intention of publishing them in quarto with brief biographical sketches, a project which was never carried out.

In Boston the gynecologist James Read Chadwick (1844-1905) developed and guided the Boston Medical Library as Librarian for over twenty-five years, winning the support of men like Oliver Wendell Holmes, whose gift set the example for the donations of countless other personal libraries from the New England area. Similarly in St. Louis the surgeon Frank J. Lutz (1855-1916) built up the library of the St. Louis Medical Society, neurologist William Browning (1855-1941) developed the Kings County Medical Library in Brooklyn, and surgeon Emmet Rixford (1865-1938) labored for the Lane Medical Library in San Francisco.⁶⁷

There was an intimate connection between activities in medical history in the United States at the turn of the twentieth century and the development of medical libraries. Thus it is not by accident that the first American periodical devoted to medical history was also the official publication of the Association of Medical Librarians. Many of the same physicians who were active in developing libraries were also writing medical history. The first issue of the *Medical Library and Historical Journal* appeared in January 1903 under the editorship of Albert T. Huntington, Librarian of the Medical Society of the County of Kings, Brooklyn, N.Y., and John S. Brownne, Librarian of the New York Academy of Medicine. Neither of these men was a physician, but the membership of the Association contained many physicians and Osler was then its President. The Association had been founded in May 1898 in ophthalmologist George M. Gould's (1848-1922) office in Philadelphia, but similar action was proposed during the Denver meeting of the American Medical Association in June under the leadership of Henry Sewall (1855-1936) and Charles David Spivak (1861-1927), both physicians of Denver, the latter having published from 1898 to 1902 a periodical called *Medical Libraries* which aimed to encourage the founding of medical libraries and exchanges of duplicate books.⁶⁸

⁶⁷ Chadwick, *op. cit.* (n. 57 above), p. 134. Draper, *op. cit.* (n. 42 above), pp. 168-170; Emmet Rixford, "Early medical schools on the Pacific Coast; a brief account of the history of the Lane Medical Library, the Cooper Medical College. . .," *Pacific Med. J.*, 1913, 56: 154 ff.

⁶⁸ The role played by Spivak in the medical library movement has never been adequately recognized and will be discussed in another paper.

The new journal, according to the introductory editorial, was

designed to fill a place occupied by no other journal, in supplying to medical historians, medical librarians and medical bibliophiles an exclusive medium of intercommunication. The awakening of interest in medical history is becoming widespread; medical bibliography long since has been a subject of great importance; the comparatively recent spread of the medical library movement is of value not easily overestimated as a matter of vital interest to the whole medical profession, not only as an educational factor, but also as a powerful influence in bringing various factions into harmony by furnishing a common rallying point. . . . Librarians, historians and bibliophiles all meet on a common ground—bibliography. The three may be said to constitute a brotherhood, each of whose interests the Journal is designed to subserve.⁶⁹

One must note that articles on medical history were already quite common in American periodicals. For years journals like the *Medical Record* (N.Y.), the *Journal of the American Medical Association*, the *Boston Medical and Surgical Journal*, the *Philadelphia Medical Journal*, and the *Cincinnati Lancet-Clinic* had published occasional original articles by Americans or had printed translations of foreign works. Examples of the latter were the translation of Georg Fischer's *Chirurgie vor 100 Jahren, Historische Studie* (Leipzig, 1876) by Carl H. von Klein, which appeared serially in the *Journal of the American Medical Association* for nearly a year,⁷⁰ and the translations by Thomas C. Minor (1846-1912) in the *Cincinnati Lancet-Clinic* of works by the French authors A. Corlieu, Edmond Dupouy, Georges Bécavin, B. Corbeau, and S. J. Witkoski.⁷¹ The new *Bulletin of the Johns Hopkins Hospital* contained historical papers issuing from the Johns Hopkins Hospital Historical Club which had been founded by Osler, Howard A. Kelly, and William H. Welch in 1890, just as the *University of Pennsylvania Medical Bulletin* published historical articles by Francis R. Packard (1870-1950) and others which were given at local medical societies. The Charaka Club, an elite medico-historical group in New York, began publishing its *Proceedings* in 1902.

⁶⁹ *Med. Library & Hist. J.*, 1903, 1: 47-48.

⁷⁰ From February 13, 1897 to January 22, 1898. See George Fischer, "Surgery one hundred years ago, translated for J.A.M.A. by Carl H. von Klein," *J.A.M.A.*, 1897, 28: 308-313, and in successive issues. For an editorial description of the translation see *ibid.*, p. 322.

⁷¹ Most were also reprinted separately. A. Corlieu, "Greek physicians from the death of Galen up to the downfall of the Oriental Empire (210 to 1453)," *Cincinnati Lancet-Clinic*, 1892, n.s. 29: 14-18, 46-52, 86-88; Georges Bécavin, "School of Salerno" (1902); B. Corbeau, "Medical archaeology" (1894); Edmond Dupouy, "Prostitution in antiquity" (1895); *Idem*, "Medicine in the Middle Ages" (1889); *Idem*, "Medicine and morals of ancient Rome according to the Latin poets" (1901); S. J. Witkoski, "The evil that has been said of doctors: extracts from early writers" (1889).

The new journal, the *Medical Library and Historical Journal*, was warmly received and favorably reviewed by the German medical historians. Julius Pagel in *Janus* labelled it as "indispensable for medical historians"⁷² and hailed the combination of medical history with library affairs as a fortunate, fruitful idea, noting also that among younger American physicians interest in history seemed to be increasing since a young New York physician had asked to have private instruction with him for several weeks during the Easter vacation.⁷³ Sudhoff also commented on the fortunate combination of medical history with library matters which would guarantee the continuance of the periodical.⁷⁴

The foundation of a medical history journal symbolized the first bloom of a movement which had developed gradually in the 1880s and 1890s and burst into blossom in the years just before World War I. Between 1890 and 1910 medico-historical teaching burgeoned in American medical schools.⁷⁵ In Chicago in 1891 Nathan Smith Davis (1817-1904), the veteran historian of the American Medical Association, began to give lectures;⁷⁶ in Philadelphia in 1892 Charles Winslow Dulles (1850-1921) initiated a compulsory course of sixteen lectures for the fourth-year class at the University of Pennsylvania. When the Johns Hopkins Medical School opened in 1893 Billings was Lecturer on Medical History, giving however only three lectures; in 1895 Roswell Park (1852-1914), Professor of Surgery at Buffalo, initiated an extensive course of lectures which he published in 1897 with the title *An Epitome of the History of Medicine* (Philadelphia, 1897). It sold so well that a second corrected edition was issued in 1899 and reprinted in 1908. At Minnesota, Burnside Foster (1861-1917) became Lecturer on the History of Medicine in 1897, like Dulles giving sixteen lectures to the Senior Class. Other teachers in this period were Henry Handerson in Cleveland, whose lecture

⁷² "Auch das neue Heft [Heft 1, Vol. 5] beweist, dass die Zeitschrift für den Historiker der Medizin unentbehrlich ist." *Janus*, 1907, 12: 538.

⁷³ *Ibid.*, 1903, 8: 276. This was probably Major G. Seelig who took a private course with him in 1902-1903. Cf. Dock, *op. cit.* (n. 60 above).

⁷⁴ *Mitt. z. Gesch. d. Med.*, 1903, 2: 359.

⁷⁵ See H. F. A. Peypers, "L'avancement de l'histoire de la médecine," *Janus*, 1901, 6: 492; Eugene F. Cordell, "The importance of the study of the history of medicine," *Med. Library & Hist. J.*, 1904, 2: 270-272. We know of at least two other courses that had been given earlier: Robley Dunglison's at the University of Virginia in the 1830s and one at the now extinct Penn Medical University in the 1850s. Wyndham D. Miles, "An early American course in history of medicine, the history of medicine course at Penn Medical University in 1854," *Bull. Hist. Med.*, 1964, 38: 276-277.

⁷⁶ These were published as *History of Medicine with the Code of Medical Ethics* (Chicago: Cleveland Press, 1903).

notes are preserved, Th. Gray at Minnesota, Chal. L. Nichols at Boston University, and James J. Walsh at Fordham. At Harvard a course was attempted, but was abandoned for lack of interest. At Yale in 1904 five or six lectures were given by the Professor of Therapeutics. Sarah Hackett Stevenson (1849-1910), the pioneer woman physician of Chicago, gave lectures at Woman's Medical School, and the newly founded University of Chicago also included a Lecturer on Medical History on its staff.

In 1903 Eugene F. Cordell (1843-1913) of Baltimore, long active in developing the Library of the Medical and Chirurgical Faculty of Maryland, was appointed Professor of the History of Medicine at the University of Maryland, the first in the country. European historians acclaimed the appointment joyously, not realizing that it was only an honorary professorship. Sudhoff, who was to wait until 1905 for his appointment at Leipzig wrote: "We greet this appointment with great joy, but also with melancholy when we reflect how our German advocates of medical history must exhibit incomparably greater efforts without receiving well deserved appointments to the long deserted professorships in either Germany or Austria."⁷⁷ The trend continued as Temple and Illinois instituted courses in 1910.⁷⁸ Medical history was unmistakably *au courant* in medical education at the turn of the century, being editorialized frequently in the *Journal of the American Medical Association* and in the *New York Medical Journal*.⁷⁹ Its value was also endorsed by Abraham Flexner in his 1910 report on *Medical Education in the United States and Canada*: "Nothing would do more to orient the student intelligently than a knowledge of the history of medical science and teaching."⁸⁰

⁷⁷ "So gehört Cordell zu den Förderern historischer Studien in Nordamerika und wir begrüßen mit lebhafter Freude seine Ernennung—aber auch mit Wehmut, wenn wir bedenken, wie unvergleichlich grössere Leistungen unsere deutschen Vertreter der Medikohistorie aufzuweisen haben, ohne dass ihnen diesseits und jenseits der schwarzgelben und schwarzweissroten Grenzpfähle die verdienten Berufungen auf lange verwaiste ordentliche Lehrstühle zuteil werden." *Mitt. z. Gesch. d. Med.*, 1904, 3: 214.

⁷⁸ Fred B. Rogers. "Dr. Jules L. Prevost and the teaching of medical history at Temple University School of Medicine, 1910-1965," *Tr. & Stud. Coll. Phys. Philad.*, 1965, 33: 139-146; Genevieve Miller, "The teaching of medical history in the United States and Canada," *Bull. Hist. Med.*, 1969, 43: 368

⁷⁹ "Janus," *J.A.M.A.*, 1896, 27: 605-606; "The study of the history of medicine," *ibid.*, 1901, 37: 453-454; "The value of medical biography to the medical student," *ibid.*, 1903, 41: 426-427. See also H. A. Geitz, "Medical history and its value to medical students," *New York Med. J.*, 1898, 67: 393-395.

⁸⁰ New York: The Carnegie Foundation, 1910, p. 52, note 1.

A parallel movement was the organization of medical history clubs. The Johns Hopkins Hospital Historical Club founded in 1890 has often been hailed as the primary impetus to the development of medico-historical activities in this country. This opinion probably arose partly from Cordell's 1904 statement that the Hopkins Club "has exercised a profound influence not only locally, but throughout the entire country,"⁸¹ partly from the generally acknowledged innovative leadership of the Hopkins medical institutions, and partly from the publicity given to it by Henry Sigerist and others at the Johns Hopkins Institute of the History of Medicine. In order to explain the antecedents of the Institute and to honor its spiritual forebears, many articles were written in the 1930s which publicized the activities of Billings, Welch, Osler and Garrison while medico-historical activities in other parts of the country were not similarly explored.⁸² The Hopkins Club was not the first American medical history club, as is frequently stated, since a New York Medico-Historical Society had existed for a few years beginning in 1864 with the purpose of "discovering, procuring and preserving whatever may relate to the Medical History of the city and county of New York,"⁸³ and there may have been other unrecorded groups.

One may therefore pose the questions whether medical history might have flourished even without the Hopkins example, and whether some of the important contributors have been overlooked in the shadow of Billings, Osler, and Welch. Certainly Howard A. Kelly (1858-1943) should receive more attention. A bibliophile even before joining the Baltimore group, Kelly shared an equal role with Osler in sparking the new historical club.⁸⁴ Like Osler he encouraged others to collect, and he gave away rare volumes to stimulate them. The Cleveland copy of the 1555 edition of Vesalius bears the inscription: "Presented to the

⁸¹ *Med. Lib. & Hist. J.*, 1904, 2: 272.

⁸² E.g. "The Fielding H. Garrison Memorial Number" (April 1937) and "The John Shaw Billings Memorial Number" (April 1938) of the *Bulletin of the History of Medicine* (1937, 5: 299-403; 1938, 6: 223-386). Also Henry E. Sigerist, "Medical history in the United States, past-present-future, a valedictory address," *Bull. Hist. Med.*, 1948, 22: 47-64; V. A. McKusick, "The Minutes of the Johns Hopkins Medical History Club, 1890-1894," *ibid.*, 1953, 27: 177-181. See also George Rosen, *op. cit.* (n. 64 above), 605, 613-614.

⁸³ *Medical Register of the City of New York* (New York, 1864), pp. 92-93; 1865, p. 66. This information was obtained with the kind help of Miss Gertrude L. Annan.

⁸⁴ "It is nice to think that the Historical Club has been such a success. It was really our baby" Letter from Osler to Kelly, Aug. 1916, in Willard E. Goodwin, "William Osler and Howard A. Kelly 'Physicians, medical historians, friends,' as revealed by nineteen letters from Osler to Kelly," *Bull. Hist. Med.*, 1946, 20: 649. See also George W. Corner, "Howard Atwood Kelly (1858-1943) as a medical historian," *Bull. Hist. Med.*, 1943, 14: 191-200.

Cleveland Medical Society as a nucleus of their Library—March 9, 1893. H.A.K.”⁸⁵ Kelly’s many historical articles, his 1906 biography of Walter Reed, and above all his two volume *Cyclopedia of American Medical Biography* published in 1912, and his *American Medical Botanists* of 1914 were invaluable contributions.⁸⁶

Preparing the *Cyclopedia* was a gigantic task. He had to secure the cooperation of physicians all over the country to be responsible for selecting leading physicians of their region and writing about them. In order to get help, he published an announcement of his project at the end of November, 1906, in various periodicals such as the *Journal of the American Medical Association* and the *Medical Library and Historical Journal*⁸⁷ requesting volunteers and asking for suggestions, biographical articles, and other reference material. By the cut-off date, December 31, 1910, biographical sketches of approximately 1,200 American physicians had been submitted by 235 authors, including the many written by his editorial assistant, Davina Waterson, and himself. Although not flawless, for some important individuals had been overlooked and the articles were of unequal value, the *Cyclopedia* was a great improvement over Atkinson, Stone, and Watson, the unselective, commercially-oriented biographical dictionaries that had appeared after Gross’ *Lives*.⁸⁸ With the collaboration of Walter L. Burrage of Boston, Kelly subsequently issued two further editions, in 1920 and 1928, under the title *American Medical Biography*, but in some ways the first edition is of most value to the historian since it contains information about the sources used by the contributors, in imitation of August Hirsch’s *Biographisches Lexikon des hervorragenden Aerzte*.⁸⁹ Some of Kelly’s notes preserved at Johns Hopkins show his concern to include details about a biographee’s personality and appearance, as well as factual information about his career. By reading Kelly one gains a warmly human picture of early American medicine, an experience similar to reading Gross’ *Autobiogra-*

⁸⁵ *Bull. Cleveland Med. Library*, 1954, n.s. 1: 14. Billings was also the recipient of his benefactions. Dr. John B. Blake has pointed out that the National Library of Medicine’s copy of Champier’s *De medicine claris scriptoribus* (1506?) bears the inscription “To Dr. Billings from Howard A. Kelly Jan 1895.”

⁸⁶ See his complete medico-historical bibliography in George W. Corner, *op. cit.* (n. 84 above).

⁸⁷ 1906, 4: 381.

⁸⁸ William B. Atkinson, *The Physicians and Surgeons of the United States* (Philadelphia, 1878); Richard F. Stone, ed., *Biography of Eminent American Physicians and Surgeons* (Indianapolis, 1894); Irving A. Watson, *op. cit.* (n. 14 above).

⁸⁹ A suggestion made by A. T. Huntington *Med. Library & Hist. J.*, 1906, 4: 380.

phy,⁹⁰ which can be recommended to all who wish to acquire a feeling about what medical men were like in nineteenth-century America.

In addition to the Hopkins club, there were other forums for the presentation of historical papers in the 1890s. In Philadelphia Francis Packard, William Pepper, Chalmers da Costa, and others read historical papers to the H. C. Wood Society of the University of Pennsylvania; in Baltimore in 1896 the Book and Journal Club of the Medical and Chirurgical Faculty was founded under Osler's influence; in Brooklyn in 1896 the Historical Committee of Kings County Medical Society was formed, evidently as a result of a banquet given to celebrate the 100th anniversary of vaccination;⁹¹ in November 1898 the Charaka Club was organized in New York by ten physicians, including Billings, "who were interested in the literary, artistic and historical aspects of medicine, and who hoped to find some recreation if not profit in dealing with this, the less serious, side of their art."⁹² In 1901 Charles A. Oliver (1853-1911) organized the Historical Club of the Department of Medicine of the University of Pennsylvania,⁹³ while the year 1905 witnessed the founding of two new societies, the History of Medicine Section of the College of Physicians of Philadelphia and the Historical Section of the Journal Club at the University of Buffalo. In 1907 was organized the very active St. Louis Medical History Club, composed of individuals like Major Seelig who had studied with Pagel, Jesse S. Myer the biographer of Beaumont, J. M. Ball the biographer of Vesalius, Otto A. Wall the historian of pharmacy, and Robert E. Schlueter the collector of Paracelsus.⁹⁴ Clubs at the University of Wisconsin and Chicago followed in 1909 and 1910 respectively.⁹⁵

Numerous American books on medical history were published in the

⁹⁰ *Autobiography of Samuel D. Gross, M.D. with Sketches of His Contemporaries*. 2 vols. (Philadelphia, 1887).

⁹¹ Harry Friedenwald, "Memories," *Bull. Med. Library Assoc.*, 1946, 34: 341; Information about Brooklyn was kindly supplied by Wesley Draper.

⁹² Introduction to volume I of *The Proceedings of the Charaka Club* (New York: William Wood, 1902).

⁹³ Charles A. Oliver. "A brief sketch of the Historical Club of the Department of Medicine of the University of Pennsylvania," *Med. Library & Hist. J.*, 1903, 1: 277-281. This journal regularly published reports on medico-historical activities throughout the country.

⁹⁴ "Medical history collections in the United States and Canada. V. The Paracelsus Collection of the St. Louis Medical Society [Robert E. Schlueter Collection], *Bull. Hist. Med.*, 1941, 9: 545-579.

⁹⁵ Kelly spoke on Feb. 19, 1910, at the first meeting of the Society of Medical History of Chicago. Program in Kelly Collection of Johns Hopkins Institute of the History of Medicine Archives.

decade before World War I. Francis R. Packard's *History of Medicine in the United States* (Philadelphia 1901), which historians today criticize as an uncritical compilation of source material, played an indispensable part in the evolution of American medical historiography,⁹⁶ as did Jesse S. Myer's *Life and Letters of William Beaumont* (St. Louis 1912) and Otto Juettner's *Daniel Drake and His Followers* (Cincinnati 1909). Even the most severe critic cannot look askance at Jonathan Wright's *The Nose and Throat in Medical History* (St. Louis 1902), a highly competent history of a specialty which was reissued in 1914 in an enlarged edition.⁹⁷ James G. Mumford, David Allyn Gorton, George M. Gould, James E. Pilcher, William Pepper, Jr., James J. Walsh, C. N. B. Camac, and Victor Robinson all published books before World War I,⁹⁸ and scores of historical articles appeared in medical journals all over the country.

European medical historians spoke with pleasure about their American colleagues who had generally been typed as banal and crassly realistic with a taste only for practical medicine. They saw that they too were interested in pure science, "vera et mera scientia," and recognized that even in advancing practical medicine one can acquire a critical sense only through having knowledge of the work of one's predecessors.⁹⁹ Several Americans became members of the Deutsche Gesellschaft für Geschichte der Medizin und der Naturwissenschaften, beginning in 1907

⁹⁶ W. B. McDaniel II. "Francis R. Packard and His Role in Medical Historiography," *Bull. Hist. Med.*, 1951, 25: 66-85.

⁹⁷ *A History of Laryngology and Rhinology*. 2d ed. revised and enlarged (Philadelphia and New York: Lea & Febiger, 1914).

⁹⁸ James G. Mumford, *A Narrative of Medicine in America* (Philadelphia: J. B. Lippincott, 1903); David Allyn Gorton, *The History of Medicine; Philosophical and Critical, from Its Origin to the Twentieth Century*. 2 vols. (New York: G. P. Putnam Sons, 1910); George M. Gould, *Biographic Clinics; the Origin of the Ill-Health of De Quincy, Carlyle, Darwin, Huxley, and Browning*, 5 vols. (Philadelphia: P. Blakiston's Son, 1903-1907); James E. Pilcher, *Surgeon Generals of the Army of the United States of America* (Carlisle, Pa., 1905); William Pepper, Jr., *The Medical Side of Benjamin Franklin* (Philadelphia: W. J. Campbell, 1911); James J. Walsh, *Makers of Modern Medicine* (New York: Fordham, 1907); *Idem*, *Old-Time Makers of Medicine; the Story of the Students and Teachers of the Sciences Related to Medicine during the Middle Ages* (New York: Fordham, 1911); C. N. B. Camac, ed., *Epoch-Making Contributions to Medicine, Surgery and the Allied Sciences, being Reprints of Those Communications Which First Conveyed Epoch-Making Observations to the Scientific World together with Biographical Sketches of the Observers* (Philadelphia: W. B. Saunders, 1909); Victor Robinson, *Pathfinders in Medicine; with a Letter from Ernst Haeckel and an Introduction by Abraham Jacobi* (New York: Medical Review of Reviews, 1912).

⁹⁹ See Pagel's comment in *Janus*, 1903, 8: 502.

with the anthropologist, Berthold Laufer of Columbia University, later with the Field Museum in Chicago, and including Robert E. Schlueter of St. Louis, Felix von Oefele of New York, a recent German immigrant who had published extensively in Germany on ancient Egyptian and Assyrian medicine, Joseph J. Walsh of New York, Frederick Edward Brasch of Stanford, Harvey Cushing of Harvard, and Edward Kremers, the historian of pharmacy at the University of Wisconsin. Fielding H. Garrison joined early in 1913; William Osler, by then at Oxford, was also a member.¹⁰⁰

During these years physicians were not alone in recording their history, for there was a parallel development in other health science fields. As early as 1905 the letterhead of the American Pharmaceutical Association mentioned a Committee on Historical Pharmacy, probably the first in the world.¹⁰¹ The American Dental Association similarly established a commission to prepare a general history of dentistry. When the task was found to be too great, arrangements were made to have Vincenzo Guerini's unpublished Italian work translated into English, and thus *A History of Dentistry from the Most Ancient Times until the End of the Eighteenth Century* (Philadelphia and New York, 1909), a work by an Italian scholar, was first published in America.¹⁰² In nursing, too, a general history was written, M. Adelaide Nutting's and Lavinia Dock's¹⁰³ two-volume *History of Nursing* (New York and London, 1907) which was immediately translated into German. Historians of other sciences were also active, viz. William A. Locy, Professor at Northwestern University, who in 1908 published *Biology and Its Makers*, a very creditable introduction to the history of biology. Florian Cajori's *History of Mathematics* was first published in New York in 1894, and he and David Eugene Smith were members of the International Commission for the History of Science in 1905. Smith's rich collection of books on the history of mathematics was exhibited at least once at the Columbia University Teachers' College.¹⁰⁴

Fielding H. Garrison was a relative latecomer to the field of medical history. In 1891 he was still a medical student when he began working as a clerk in the Surgeon General's Library and became closely associ-

¹⁰⁰ Information about German Society in *Mitteilungen zur Geschichte der Geschichte der Medizin und der Naturwissenschaften*, 1907-1913, *passim*.

¹⁰¹ Schelenz in *ibid.*, 1905, 4: 224-225.

¹⁰² Sudhoff in *ibid.*, 1910, 9: 49-50.

¹⁰³ She was the sister of George Dock.

¹⁰⁴ *Mitt. z. Gesch. d. Med.*, 1905, 4: 473; *ibid.*, 1910, 9: 213-214.

ated with Billings and particularly Robert Fletcher, the scholarly editor of *Index Medicus* whom he assisted. His first publication "A Sketch of the Library of the Surgeon-General's Office," appeared in the *Medical Library and Historical Journal* in 1906.¹⁰⁵ Claudius Mayer¹⁰⁶ believed that an editorial which appeared in the same issue may have been responsible for his writing his *Introduction to the History of Medicine*. It suggested the need for a new comprehensive history of medicine in English, but judged that such a task was probably impossible for one person and should be done by a group of carefully selected experts with "judicious editorial welding" of the material. However, the editor did not think that the time was yet ripe: "We have a constantly increasing number of historical students diligently browsing in an attractive pasture, but the number of scholars is limited. A further process of ripening and of the tilling of special chosen fields is essential."¹⁰⁷ He concluded by suggesting that this could be achieved by organizing an American Medico-Historical Society "to bring about this closer knowledge of each other's work," a suggestion which Cordell had already made three years earlier. Whatever his motives, Garrison ignored the caution of the editor and toiled for seven years until his book appeared in 1913. Based principally on German models, the book, which Garrison never regarded as "anything but a primer,"¹⁰⁸ incorporated the most advanced European scholarship, and included many new literary and artistic interrelations which were not in other histories. His reputation was immediately established as the foremost medical historian in the United States.

If the impression has been given that medical history was the rage of the medical profession during the period we have been discussing, it must be quickly revised. Only a minuscule number of physicians, as today, were involved. In 1882 George Jackson Fisher had lamented: "Alas! I am sorry to admit that Celsus, as well as all of the ancient medical writers, finds but few readers in our own country. The rage for novelty, the utilitarian spirit, the so-called progressive impulse—in itself commendable—which closes the doors upon them, ignores the past, and looks with pitiful contempt upon all ancient medical literature."¹⁰⁹

¹⁰⁵ *Med. Library & Hist. J.*, 1906, 4: 211-216.

¹⁰⁶ Claudius Frank Mayer. "The literary activity of Fielding H. Garrison, M.D.," *Bull. Hist. Med.*, 1937, 5: 378.

¹⁰⁷ *Med. Library & Hist. J.*, 1906, 4: 221.

¹⁰⁸ Mayer, *op. cit.* (n. 106 above), p. 384. For a recent evaluation of Garrison see Erwin H. Ackerknecht, "Zum hundertsten Geburtstag von Fielding H. Garrison," *Gesnerus*, 1970, 27: 229-230.

¹⁰⁹ *Ann. Anat. & Surg.*, Brooklyn, N.Y., 1882, 5: 131.

Ordronaux, while telling the Johns Hopkins Hospital Historical Club in 1903 about his 1870 translation of the *Regimen*, mentioned that it was "known only to antiquarian students as a lost monument of misty erudition and cloistered industry."¹¹⁰

On the other hand some knowledge of the major figures and principal eras of the medical past was probably more firmly engraved in the memory of well educated physicians than is the case today. Gross, for example, named one of his sons for Albrecht Haller.¹¹¹ Historical topics were often selected for public addresses by foreign visitors, as when Michael Foster from Cambridge was invited to deliver the Lane Lectures at Cooper Medical College in San Francisco in 1900 and chose the subject "The History of Physiology during the Sixteenth, Seventeenth and Eighteenth Centuries," giving ten lectures which were eventually published at Cambridge in 1901. Similarly T. Clifford Allbutt delivered an address to the St. Louis Congress in 1904 on "The Historical Relations of Medicine and Surgery to the End of the Sixteenth Century," and Julius Hirschberg spoke on "Arabian Ophthalmology" to the Section on Ophthalmology of the American Medical Association in July 1905.¹¹²

A number of those who appreciated history were European immigrants whose taste reflected their classical education: Abraham Jacobi (1830-1919) of New York, often called the father of American pediatrics, published important papers on the history of his specialty in America;¹¹³ Otto Juettner (1865-1922) of Cincinnati, who wrote on the medical history of his adopted city; Carl H. von Klein of Cleveland and Chicago, who translated German books for the *Journal of the American Medical Association* and tried to make the Ebers Papyrus available to American readers;¹¹⁴ Charles David Spivak (1861-1927) of Denver, a Russian immigrant who not only stimulated the formation of medical libraries but also collected bibliographical data on Colorado medical history;¹¹⁵

¹¹⁰ *Op. cit.* (n. 39 above), p. 52.

¹¹¹ *Op. cit.* (n. 90 above), vol. I, p. 214.

¹¹² T. Clifford Allbutt, *The Historical Relations of Medicine and Surgery to the End of the Sixteenth Century* (London: Macmillan, 1905); Julius Hirschberg, "Arabian ophthalmology," *J.A.M.A.*, 1905, 45: 1127-1131.

¹¹³ E.g. A. Jacobi, "History of American pediatrics before 1800," *Janus*, 1902, 7: 460-465, 518 ff., 590 ff., 622 ff.; *Idem*, "The history of pediatrics and its relation to other sciences and arts," *American Med.*, 1904, 8: 795-805; see his obituary by F. H. Garrison in *Science*, 1919, n.s. 50: 102-104.

¹¹⁴ See n. 119 below.

¹¹⁵ *Medical Coloradoana, a Jubilee Volume in Celebration of the Semi-Centennial Anniversary of the Colorado State Medical Society, 1871-1921* (Denver, 1922), first published in *Colorado Med.*, 1919, 16: 192-198 and subsequent issues.

Simon Baruch (1840-1921) of New York, who read a paper at the 1902 Karlsbad meeting of the Deutsche Gesellschaft für Geschichte der Medizin and became involved in a controversy in the pages of *Janus* over the American or Hungarian origin of the knowledge of the contagiousness of puerperal fever.¹¹⁶

There was, however, still no market for specialized historical publications in America at this time. The *Medical Library and Historical Journal* died after five volumes. Then its editor changed the title to the *Aesculapian*, possibly in an effort to give it a broader appeal, but it too died after one year.¹¹⁷ It was not until 1917 when Paul Hoeber, a commercial publisher, launched the *Annals of Medical History* with Francis R. Packard as Editor, and 1920 when Victor Robinson commenced *Medical Life* that separate historical journals became stabilized. Attempts to publish facsimile editions of historical classics before World War I were total failures. Stockton Hough's failure of 1890 has already been noted. In 1903 an announcement appeared in the first volume of the *Medical Library and Historical Journal* of a plan to publish facsimile reprints of medical Americana. The first was William Douglass' Boston pamphlet of 1722 against smallpox inoculation, with an introduction by Lewis Stephen Pilcher. The edition was to be limited to 150 signed and numbered copies to be sold for \$1.00.¹¹⁸ Four subscriptions were obtained. In 1908 a reader noted that William Harvey was the only medical author available in Everyman's Library and pleaded for republication of American medical classics. The editor's request for comments and suggestions produced two replies from a thousand readers.¹¹⁹ Dr. Carl von Klein's 650-page translation of the Ebers Papyrus to be printed in two colors also never was published because the necessary 1000 subscriptions could not be obtained.¹²⁰ Meanwhile in 1900 in Cincinnati the

¹¹⁶ Simon Baruch. "Einige Amerikanischen Beiträge zur Entwicklung der modernen Therapie," *Janus*, 1902, 7: 509-517; 1903, 8: 7 ff., 621 ff.; "Ein letztes Wort zur Prioritätsfrage Holmes-Semmelweis," *ibid.*, 1903, 9: 212-213.

¹¹⁷ Unfortunately little is known about its editor, Albert Tracy Huntington, who was the first professional librarian of the Kings County Medical Library from 1899 to 1917. Born in Cincinnati ca. 1879, he had been with the publishing house of Macmillan & Co. for a year before becoming an assistant in the Library of the New York Academy of Medicine from whence he went to Brooklyn. He read Latin, Greek, and German, and his excellent editorials exhibit a critical scholarly attitude (Documents from Academy of Medicine of Brooklyn Library kindly furnished by Wesley Draper).

¹¹⁸ *Med. Library & Hist. J.*, 1904, 1: 139.

¹¹⁹ *Aesculapian*, 1908, 1: 60, 142.

¹²⁰ See subscription appeal in *Bull. Med. Library A.*, 1912, n.s. 2: 12. It is also in *Surgery, Gynecology and Obstetrics*, 1912, 14: 94.

Lloyd brothers had launched a plan to issue facsimile reproductions of rare works in pharmacy, materia medica, and botany in their library. The first *Bulletin of the Lloyd Library* reproduced Benjamin Smith Barton's *Collections for an Essay towards a Materia Medica of the United States* (Philadelphia, 1798). That the sale was not colossal is apparent, since most of these facsimiles are still in print and may be purchased today at the Lloyd Library.

We have been discussing the work of amateurs, those who loved medical history and pursued it as an avocation while carrying on busy careers as physicians or surgeons or librarians. We have seen that the chief literary activities of American medical historians in this period consisted of uncovering the American past and of transmitting European scholarship to American readers. We have seen how the volume of historical publications increased as the new century began, how historians had begun to organize formally and to publish collectively. We have seen how medical libraries were being developed by physicians with a sense of history. In the act of accumulating books and of preserving pamphlets and other ephemeral materials, they made possible the writing of history of ever broader and deeper scope. If today we professional historians find well stocked libraries and bibliographical tools for our new interpretations of old historical subjects, a great credit is due to our amateur predecessors who made our work possible. It seems appropriate to conclude this Garrison Lecture with the motto which appears on the title page of Comegys' translation of Renouard and is applicable to medical historiography:

"The Sciences are gradually developed. It is only by reviewing past centuries that we can determine their laws of growth."

Acknowledgment

Grateful acknowledgment is made for the generous assistance rendered by Gertrude L. Annan of New York, Wesley Draper of the Academy of Medicine of Brooklyn Library, Lisabeth M. Holloway of the Library of the College of Physicians of Philadelphia, Alice C. Joyce of the Library of Washington University School of Medicine, Janet B. Koudelka of the Johns Hopkins Institute of the History of Medicine, Peter Stangl of Lane Medical Library of Stanford University, and Marilyn J. Wolfe of the Cleveland Health Sciences Library, as well as by personnel of the National Library of Medicine, the Cincinnati Historical Society, and the Archives of Medical History of the University of Cincinnati.

AMERICAN ASSOCIATION FOR THE HISTORY OF MEDICINE

REPORT OF THE FORTY-SIXTH ANNUAL MEETING

Cincinnati, Ohio

May 2-5, 1973

The forty-sixth annual meeting of the American Association for the History of Medicine was held in Cincinnati, Ohio, May 2-5, 1973. All sessions took place at Stouffer's Cincinnati Inn, the headquarters hotel. The Local Arrangements Committee, of which Saul Benison was chairman, offered generous and warm hospitality. The efforts expended by Cecil Striker to make visitors welcome must be particularly noted. Sincere thanks are extended from the Association for all the industrious preparations of the Program Committee as well as for the excellent program arranged by it under the chairmanship of Peter D. Olch. There were 176 registrants.

This report, which contains the program, minutes of the Council and Business Meetings, and the financial report for the fiscal year 1971/72 has been prepared by the Secretary-Treasurer, Genevieve Miller, and is presented for the members' information.

PROGRAM

Wednesday, May 2

7:00 p.m. Reception: Bamboo Room

8:00 p.m. Council Meeting

Thursday, May 3

9:00 a.m. Opening Session

Saul Jarcho, *presiding*

Welcome from representative of U. of Cincinnati

Cincinnati Medicine

Cecil Striker

Prehistoric Maya Health: The Skeletal Record

Frank P. Saul

Medical and Philosophical Ideas of Fear: Greek Beginnings

Thomas S. Hall

Characterization of the Physician in the Graeco-Roman Novel

Darrel W. Amundsen

Medicinal Uses of Vegetable Gums in the Middle Ages

Jerry Stannard

The Medical Botany of Dr. William Darlington (1782-1864)

Dorothy I. Lansing

2:00 p.m. General Session

Arthur G. King, *presiding*

"Doctor William Cullen, Physician, Edinburgh": A Select Consultation Practice in the Eighteenth Century

Guenter B. Risse

Mucous Membrane Physiology from Sharpey to Hilding

Donald F. Proctor

The Victorian Use of Mortality Statistics as an Index of Social Condition: A Survey of Problems

John M. Eyler

4:00 p.m. The Fielding H. Garrison Lecture

John B. Blake, *presiding*

In Praise of Amateurs: Medical History in America before Garrison

Genevieve Miller

Friday, May 4

9:00 a.m. Symposium on Oral History in the Medical Sciences

James Harvey Young, *presiding*

An Overview of Oral History in the Medical Sciences

Peter D. Olch

Tapes vs. Transcripts as Historical Sources

Saul Benison

Identification of Specific Methodological Issues

Charles T. Morrissey

AOA-NMAC Videotaped Interviews with Contemporary Medical Leaders

Joseph P. Mingioli

11:00 a.m. *"Measuring" for the Treatment of Physical Malady: A Folk Custom*

Wayland D. Hand

Interpreting the History of a Medical Specialty Through Its Instruments

Doris Leckie

12:00 noon Luncheon Meetings—Attendance by preregistration

1. *The Multidisciplinary Approach to Medical History*

Lester S. King

2. *Sources of Funding for Historical Research*

Vern L. Bullough

3. *The Care and Preservation of a Private Rare Book Collection*

Peter Krivatsy

2:00 p.m. General Session

Chester Burns, *presiding*

To Promote the General Welfare—The Constitutional and Legal Impact of Epidemic Disease upon Nineteenth Century Texas

James Brooks Speer, Jr.

Chemicals and Meat: The Embalmed Beef Scandal of the Spanish-American War

Edward F. Keuchel

4:00 p.m. Business Meeting

John B. Blake, *presiding*

6:30 p.m. Cocktails: Bamboo B

7:30 p.m. Annual Banquet: Bronze Room A

Josiah Bartlett: New Hampshire's Founding Physician

Thomas N. Bonner

Saturday, May 5

9:00 a.m. General Session

Peter D. Olch, *presiding*

Physiological Explanation in Magendie's Manifesto of 1809

William R. Albury

Lister, His Books, Writing Practices, and Work

Owen H. Wangenstein and Sarah D. Wangenstein

The Blind Man and the French Revolution

Dora B. Weiner

A Footnote on the History of Spinal Anatomy and Surgery

Robert H. Ackerman

The Disease of Masturbation: Values and the Concept of Disease

H. Tristram Engelhardt, Jr.

The Admission of Women to Nineteenth Century Medical Societies

Martin Kaufman

MINUTES OF THE ANNUAL MEETING OF THE COUNCIL

May 2, 1973

The annual meeting of the Council of the American Association for the History of Medicine, Inc., was held at the Stouffer's Cincinnati Inn, Cincinnati, Ohio at 8 p.m. on May 2, 1973. John B. Blake, President of the Association, served as Chairman and Genevieve Miller as Secretary. The following Council members were present: Whitfield J. Bell, Jr., Lester S. King, Irving A. Beck, Alex Berman, Joseph H. Kiefer, Peter D. Olch, James H. Cassedy, G. E. Erikson, Jane M. Oppenheimer, Chester R. Burns, Martha Teach Gnudi, and Stanley W. Jackson. Absent were Eric T. Carlson and William C. Gibson. Council nominee Jerry Stannard also attended.

The minutes of the previous meeting, as circulated to the Council in May 1972, were approved. They are being printed in full in the January-February 1973 issue of the *Bulletin of the History of Medicine* which is in press.

The Secretary-Treasurer presented the Financial Report for the Fiscal Year 1971/72 ending 31 October 1972, which was approved for presentation to the Business Meeting. The President appointed Drs. Kiefer and Beck as Auditors. The Secretary-Treasurer presented a proposed budget for fiscal year 1973/74 which includes a new Publication Fund item amounting to \$1,500, explaining that this is the approximate yearly increase in the Association's assets. She also commented on the growth of the Association, noting that during the fiscal year 1971/72 there were 93 new active members, 2 new non-resident members, and 1 honorary member. Between 1 November 1972 and the present 45 additional active members have joined.

Noting the expenditure for the Membership Directory, Dr. Kiefer

moved that a Supplement be issued during the summer of 1973 listing new and deceased members. The motion was approved.

The Secretary-Treasurer reported on activities since the last Council Meeting. These included the publication of the Membership Directory in July 1972, the preparation of an honorary membership certificate (sample demonstrated), the Association-sponsored group flight to London in September 1972 to attend the International Congress of the History of Medicine, writing the more than 100 electors of the New York University Hall of Fame for Great Americans on behalf of Dr. William H. Welch, the Association-sponsored candidate, the issuing of "Works in Progress" in February 1973, the election by the Council of the William H. Welch Medal winner, Mrs. Margaret Tallmadge May¹ of Ithaca, N.Y., and of the William Osler Medal winner, Kenneth Michael Flegel² of Montreal. The latter is present in Cincinnati to receive his award in person.

The applications of two new Constituent Societies were approved: the Section on Medical History of the College of Physicians of Philadelphia and the William Snow Miller Medical History Seminar at the University of Wisconsin.

The President appointed and the Council approved the following Nominating Committee: James Harvey Young, *Chairman*, Robert P. Hudson, and Dorothy I. Lansing.

The President appointed and the Council approved Genevieve Miller as United States delegate to the Société Internationale d'Histoire de la Médecine. Morris H. Saffron was appointed Alternate Delegate. Genevieve Miller was instructed to review the Bylaws and practices of the Association in relation to the Statutes and practices of the Société Internationale in order to reconcile them, and to prepare before the 1974 Annual Meeting of the Association a revised set of Bylaws for consideration of the members. It was noted that when the A.A.H.M. was founded in 1925, it was officially designated as the U.S. and Canadian section of the Société Internationale. In recent years the Société Internationale has not recognized the Canadian delegate appointed by the President of the Association, since its statutes declare that national delegates must be appointed by the national society of each nation, or if no society exists, be approved by the Permanent Committee of the Société Internationale.

During the past year a Société Canadienne d'Histoire de la Médecine has been organized by Dr. de la Broquerie Fortier of Quebec. The

¹ *Galen on the Usefulness of the Parts of the Body* (Cornell U. Press, 1968).

² Title of essay: "Gonorrhoea and syphilis, a nosological history."

Secretary-Treasurer read a letter dated April 18, 1973, from Dr. Fortier announcing that the Société Canadienne is in the process of organizing the 25th International Congress of the History of Medicine which will be held in August, 1976 in Quebec and Montreal. He mentioned the various themes of the Congress, one of them "L'influence de la médecine européenne sur la Médecine Nord Américaine au moment de l'Indépendance des Etats-Unis (1776)" and asked for comments. The Council requested the Secretary to express appreciation to Dr. Fortier and to state that many of the Association members will be delighted for the opportunity to attend. No formal association with the Congress was suggested. The Secretary presented the names of 45 members of the Association who wished to be recommended for membership in the International Society. The Council approved their recommendation.

The President announced that the next Annual Meeting of the Association will be in Charleston, South Carolina, April 18-20, 1974, with Dr. J. I. Waring as Chairman of the Local Arrangements Committee. The 1975 meeting will be held in Philadelphia, May 1-3, at the Benjamin Franklin Hotel, with possible sessions at Jefferson Medical College, the Pennsylvania Hospital and the American Philosophical Society. Dr. Bell suggested that the Program Committee might consider as one of the themes "Medical Historiography in America," and that the history of the Association which is being prepared by Genevieve Miller might be printed in the *Bulletin* and distributed as reprints to those attending the meeting.

An invitation to hold the 1976 Annual Meeting at Galveston, Texas was extended by Dr. Chester R. Burns, who noted that the meeting would possibly be co-sponsored by the University of Texas Medical Branch at Galveston and the Texas Medical Center at Houston. On the motion of Dr. Oppenheimer and the unanimous vote of the Council, the invitation was accepted.

Dr. Guenter B. Risse, in a letter dated October 26, 1972, and subsequent endorsements of various officials of the University of Wisconsin, extended an invitation to the Association to hold its 1977 Annual Meeting in Madison, Wisconsin in the newly completed Center for Health Sciences. On the motion of Dr. Berman and the unanimous vote of the Council, the invitation was accepted.

The President introduced for discussion the proposed Publication Fund. He mentioned the growing surplus of Association funds and reminded the Council that the proper use of Association monies should be to promote studies beneficial both to the membership and to all who are

interested in medical history beyond our own group. After a Council discussion of various ramifications of the Fund proposal, the President suggested that it would be desirable to establish a mechanism for creating formal arrangements between the Association and the *Bulletin of the History of Medicine* without interfering with the prerogatives of the Editor. He noted that the Advisory Editorial Committee of the *Bulletin*, of which half is selected by the Association, is permanent in nature and its function is principally to advise the Editor. He pointed out that the Editorial Committee of the Association described in the Bylaws (Article X, Section 7) might explore in greater detail possible uses for the proposed Publication Fund, as well as review relations between the Association and the Johns Hopkins University and any changes that may be proposed in the existing agreement respecting the *Bulletin* (*Bull. Hist. Med.*, 1952, 26: 603-605). On the motion of Dr. King and the approval of the Council, the suggestion that the Editorial Committee be given the above charge was passed. The Committee was also directed to prepare a report to be circulated to Council members within the year. Council approval can be obtained by mail ballot. The President appointed and the Council approved the following members of the Editorial Committee: James H. Cassedy, *Chairman*, L. J. Rather; and Thomas G. Benedek.

A letter dated May 2, 1973, from Dr. Robert P. Hudson was presented to the Council. It included a proposal to honor Dr. Ralph H. Major, possibly by establishing a medal and a monetary award, and designed to encourage and sustain non-professional interest in the history of medicine. The Council recommended that the proposal be tabled until next year, so that members will have the opportunity to explore further and discuss the proposal with Dr. Hudson. It voted that there should be official communication with Dr. Hudson, expressing the Council's appreciation of his offer and its very considerable importance.

Dr. Cassedy reported on "Works in Progress" which he prepared and issued in February 1973, indicating that he would be willing to continue. Dr. Burns moved that gratitude and appreciation be expressed to him. The Council voted to publish "Works in Progress" every two years.

Dr. Erikson asked whether the Association should not consider having a complete taped record of all its proceedings, Council Meetings, etc. No interest was evinced by the Council.

Dr. Burns, in reviewing the results of the questionnaire concerning annual meetings which had been prepared for the Montreal meeting by Dr. Donald G. Bates, stated that one of the recommendations had been

greater flexibility in the programs. He suggested to the Council that the possibility of joint meetings with other societies might be explored. The Council opined that a member of the Association might arrange a joint session with another society, subject to the approval of the Council, but that a joint Annual Meeting of the Association with another society was not desirable.

The Council meeting adjourned at 10:30 p.m.

Genevieve Miller
Secretary-Treasurer

MINUTES OF THE ANNUAL BUSINESS MEETING

May 4, 1973

The Annual Business Meeting of the American Association for the History of Medicine, Inc. was held in the Stouffer's Cincinnati Inn, Cincinnati, Ohio on May 4, 1973. John B. Blake, President of the Association, served as Chairman, and Genevieve Miller as Secretary-Treasurer.

The President called the meeting to order at 4:05 p.m. The minutes of the previous meeting were approved. They are being published in the January-February 1973 issue of the *Bulletin of the History of Medicine*.

The Secretary-Treasurer read the names of members who had died since the previous meeting, while the audience stood for a moment of silence. The deceased members were:

Edward D. Churchill
Chester N. Frazier
Robert D. Gauchat
Robert D. Knapp, Jr. (killed with his son in a plane crash)
Felix Martí-Ibañez

The Secretary-Treasurer presented a summary of the Financial Report for the Fiscal Year 1971/72, and the Auditors reported that the books were in order. The members present voted to accept and approve the reports.

The President summarized the actions of the Council meeting and called for a discussion of the proposed Publication Fund. After various suggestions that the increase in assets might be used to subsidize supple-

ments to the *Bulletin*, or to publish facsimiles, or to enlarge the *Bulletin*, the members approved the establishment of such a fund.

Dr. Vern Bullough moved a vote of commendation to Dr. James H. Cassedy for his labors in compiling "Works in Progress" and urged that it be continued. The members concurred in the motion.

In the absence of the Chairman of the Nominating Committee, the Secretary-Treasurer read the following slate of candidates:

Secretary-Treasurer
(Two year term)

Genevieve Miller

Members of Council
(Three year terms)

G. S. T. Cavanagh
Johanna Grimes
Gordon W. Jones
Jerry Stannard

On motion from the floor, the candidates were elected unanimously.

Dr. A. B. Schneider proposed that the Association consider instituting Life Memberships. The matter will be investigated and reported at the next meeting.

Dr. Vern Bullough proposed that the Council consider affiliating the Association with the American Council of Learned Societies.

Dr. Samuel X. Radbill eulogized the recently deceased former Secretary-Treasurer of the Association, Dr. William G. Leaman of Philadelphia, who was active in Association affairs during World War II. He also pointed out that the late Robert D. Gauchat, a pediatrician from Iowa City, had helped to establish the T. G. H. Drake Collection at the Toronto Academy of Medicine and had been a founder of the Pediatrics History Club of the American Pediatrics Association. He noted also that the late Chester N. Frazier had worked with Chauncey Leake in promoting the history of medicine at Galveston.

Dr. Alfred H. Whittaker raised the question whether there is a permanent repository of works by members of the Association and suggested that the officers consider its establishment. The President stated that the inactive records of the Association are deposited at the Library of the College of Physicians of Philadelphia.

Dr. George Rosen announced that the Society for the Social History of Medicine which had been founded in England several years ago is soliciting more members. The possibility of an American chapter is being considered and interested individuals should contact him for further information.

Dr. Radbill moved an expression of appreciation for the generous and warm hospitality of the Cincinnati hosts, especially to Dr. Cecil Striker and Dr. Saul Benison. There was hearty applause.

Dr. Chester R. Burns announced that on October 27-28, 1973, the University of Texas is sponsoring a symposium on the history of railway medicine. The meeting will take place in Houston, Texas and members of the Association are invited to attend.

Dr. Thomas Benedek raised the question of the publication schedule of the *Bulletin* which is now five months behind time. Dr. Lloyd Stevenson explained that there had been difficulties with the printer, who now has the copy for three issues through June 1973; the matter is being investigated by the publisher, the Johns Hopkins Press, and the normal schedule will be resumed as rapidly as possible.

There being no further business, the meeting adjourned at 4:55 p.m.

Genevieve Miller
Secretary-Treasurer

AMERICAN ASSOCIATION FOR THE HISTORY OF MEDICINE, INC.

Financial Report on the Fiscal Year 1971/72
Ending 31 October 1972

CLASSIFIED STATEMENT OF RECEIPTS AND EXPENDITURES 1 November 1971-31 October 1972

GENERAL FUND

RECEIPTS

Dues

Regular Members	\$11,478.58	
Contributing Members	585.00	
Sustaining Members	100.00	
Non-Resident Members	360.00	
Non-Resident Contributing	25.00	
Constituent Societies	375.00	
Contributing Constit. Soc.	30.00	
Sustaining Constit. Society	50.00	
Family Members	20.00	
Student Members	127.50	
Advance dues	40.00	\$13,191.08
Address list sale		115.00
Refund from Johns Hopkins Press		488.15
Interest from Savings Accounts		518.57
Total receipts 1971/72		14,312.80
Balance 1 November 1971		7,523.03
		<u>\$21,835.83</u>

EXPENDITURES

Subscriptions to <i>Bulletin Hist. Med.</i>	\$ 9,178.00
Administrative expenses	
Printing, postage, stationery, etc.	1,118.65
Clerical assistance	555.64
Printing and mailing Membership Directory	634.09
Dues refund	10.00
Honors and Awards	
Osler Medal	270.00
Welch Medal	340.05
Honorary Member Certificates	75.00
Garrison Lecture	594.12
	<u>\$12,775.55</u>
Balance 31 October 1972	9,060.28
	<u>\$21,835.83</u>

PRESIDENT'S DISCRETIONARY FUND

RECEIPTS

	000.00
Balance 1 November 1971	126.95
	<u>\$ 126.95</u>

EXPENDITURES

President's Office expenses .	46.18
Balance 31 October 1972	80.77
	<u>\$ 126.95</u>

ANNUAL MEETING FUND

RECEIPTS

Registration and reservation fees—Montreal meeting	\$ 3,313.68
Balance 1 November 1971	921.84
	<u>\$ 4,235.52</u>

EXPENDITURES

Montreal meeting	\$ 3,441.11
Cincinnati meeting	87.80
Balance 31 October 1972	706.61
	<u>\$ 4,235.52</u>

HENRY R. VIETS BEQUEST

RECEIPTS

	\$ 0,000.00
Balance 1 November 1971	1,010.11
	<u>\$ 1,010.11</u>

EXPENDITURES

	\$ 0,000.00
Balance 31 October 1972	1,010.11
	<u>\$ 1,010.11</u>

STATEMENT OF BALANCE

31 October 1971

ASSETS

Cash in Bank—Operating Fund	\$ 614.41
Cash in Operating Savings Acct.—Continental Bank	3,967.52
Operating Fund—5 percent	
Savings Acct.—Continental Bank	5,000.00
	<u>\$ 9,581.93</u>
	<u>-----</u>

LIABILITIES

NET WORTH

General Fund	7,523.03	
President's Fund	126.95	
Annual Meeting Fund	921.84	
Henry R. Viets Bequest	1,010.11	
	<u> </u>	\$ 9,581.93
		<u> </u>

31 October 1972

ASSETS

Cash in Bank—Operating Fund	\$ 1,027.08	
Undeposited Cash	344.60	
Cash in Operating Savings Acct.—Continental Bank	4,174.08	
Operating Fund—5 percent Savings Acct.—Continental Bank	5,312.01	
	<u> </u>	\$10,857.77
		<u> </u>

LIABILITIES

NET WORTH

General Fund	9,060.28	
President's Fund	80.77	
Annual Meeting Fund	706.61	
Henry R. Viets Bequest	1,010.11	
	<u> </u>	\$10,857.77
		<u> </u>

AMERICAN ASSOCIATION FOR THE HISTORY OF MEDICINE, INC.

NEW REGULAR MEMBERS

1 November 1971-31 October 1972

Frank Abbati, M.D. Toledo, Ohio	H. Tristram Engelhardt, Jr., Ph.D., M.D. Galveston, Texas
Robert H. Ackerman, M.D., M.P.H. Boston, Massachusetts	John M. Eyler, Ph.D. Stoughton, Wisconsin
Frank Anker, M.D. Oakland, California	John H. Ferguson, M.D. Cleveland, Ohio
Lawrence P. Berens, M.B.A. Oak Lawn, Illinois	Emil F. Frey, M.S. Stony Brook, New York
William A. Boehm, M.D. Barksdale AFB, Louisiana	Stuart Galishoff, Ph.D. Atlanta, Georgia
Philip D. Bonnet, M.D. Baltimore, Maryland	David Green, M.B., B.S. (Melb.) Albany, New York
William Brueggemann, M.D. Cincinnati, Ohio	L. Fraser Guy, M.D. Rochester, New York
Douglas R. Budde, M.A. Durham, New Hampshire	Elizabeth Haigh, M.Sc. Halifax, Nova Scotia, Canada
Philip Cash, Ph.D. Framingham, Massachusetts	Thomas S. Hall, Ph.D. St. Louis, Missouri
Walter Randolph Chitwood, M.D. Wytheville, Virginia	Wayland D. Hand, Ph.D. Los Angeles, California
Robert R. Crawford, M.D. Mansfield, Ohio	Stanley M. Hanfling, M.D. San Mateo, California
James Henry Davis, M.D. Long Beach, California	Leon D. Hankoff, M.D. Bronx, New York
Robert C. Davis, Ph.D. Cleveland, Ohio	Jason Albert Hannah, M.D. Toronto, Ontario, Canada
Tibor Doby, M.D. Portland, Maine	Mrs. Ann M. Heil Philadelphia, Pennsylvania
Patrick J. Dowling, M.D. New Orleans, Louisiana	Donald Wayne Hemphill, Jr., M.D. Bellflower, California
Mrs. Zelma Lois Dunn, M.Ed. San Francisco, California	Mrs. June Leath Huntley Ottawa, Ontario, Canada
Paul G. Dyment, M.D. Cleveland Heights, Ohio	Burton A. Johnson, M.D. Silver Spring, Maryland
Milton Engel, M.D. Washington, D. C.	Dennis Johnson, M.D. San Diego, California

Philip A. Kalisch, Ph.D.
Hattiesburg, Mississippi

J. Austin Kerr, M.D.
Chevy Chase, Maryland

Edward F. Keuchel, Ph.D.
Tallahassee, Florida

Arthur G. King, M.D.
Cincinnati, Ohio

Timothy Koerner, M.A.
Farmington, Michigan

Eugenia Kucherenko
Cleveland, Ohio

Laverne J. Kuhnke, Ph.D.
Great Neck, New York

B. James Larson, M.T. (ASCP)
Little Falls, Minnesota

Marshal S. Levine, M.D.
Columbia, Maryland

Paul Levitan, M.S.
Jamaica, New York

Charles R. Lewis, M.D.
St. Louis, Missouri

Camille Limoges, Doct. (Paris)
Baltimore, Maryland

Loren George Lipson, M.D.
Washington, D. C.

Donald H. MacPherson, M.D.
Marion, Ohio

Rodney A. Mannion, M.D.
Michigan City, Indiana

Walker Copeland McGraw, M.D.
Atlanta, Georgia

Michael R. McVaugh, Ph.D.
Chapel Hill, North Carolina

George Molnar, M.D., FRCP(C)
Hamilton, Ontario, Canada

William A. Murphy, Jr., M.D.
St. Louis, Missouri

Earl F. Nation, M.D.
Pasadena, California

Russell A. Nelson, M.D.
Wichita, Kansas

Charles P. Nichols, M.D.
Bellflower, California

Francis M. Nichols, M.A.
Chapel Hill, North Carolina

Eleanor E. Pasmik, M.S.
New York, New York

Lucille B. Pinto, Ph.D.
St. Louis, Missouri

Rev. Paul John Rich, Ed.M.
East Bridgewater, Massachusetts

R. Alan Richardson, Ph.D.
London, Ontario, Canada

Cynthia Kolb Robinson, M.L.S.
Galveston, Texas

Russell R. Roby
San Antonio, Texas

Charles W. Sargent, Ph.D.
Lubbock, Texas

David L. Sauers, M.D.
Bellflower, California

Dorothy T. Scanlon, Ph.D.
Chestnut Hill, Massachusetts

Alfred Rives Shands, Jr., M.D.
Wilmington, Delaware

David Arthur Shephard, M.D.
Rochester, Minnesota

Robert K. Spiro, M.D.
Bloomfield, New Jersey

Dennis Stillings
Minneapolis, Minnesota

Norman Taslitz, Ph.D.
Cleveland, Ohio

Wallace K. Tomlinson, M.D.
New Orleans, Louisiana

Martha Voght, M.A.
Culver City, California

Neale Wheeler Watson
New York, New York

Robert I. Watson, Ph.D.
Durham, New Hampshire

John Whalley, M.D.
Long Beach, California

Mrs. G. D. Wilbanks
Chicago, Illinois

George D. Wilbanks, M.D.
Chicago, Illinois

William H. Williams, Ph.D.
Georgetown, Delaware

Arnold Zuckerman, Ph.D.
Kirksville, Missouri

NEW NON-RESIDENT MEMBERS

1 November 1971-31 October 1972

Axel Murken, M.D.
Dusseldorf, West Germany

Hue-Long Tsai, M.D., Ph.D.
Taichung, Taiwan

NEW FAMILY MEMBERS

1 November 1971-31 October 1972

Stanley M. Jackson, M.D.
Joan K. Jackson
New Haven, Connecticut

NEW HONORARY MEMBERS

1 November 1971-31 October 1972

Richard Rudolph Walzer, Ph.D., F.B.A.
Oxford, England

NEW STUDENT MEMBERS

1 November 1971-31 October 1972

Anthony B. Bottone, M.D.
San Francisco, California

Ann Gayton Carmichael
Durham, North Carolina

Edward J. Dziczkowski
Maple Heights, Ohio

B. Russell Eby
Loma Linda, California

Peter C. English
Durham, North Carolina

Ramunas Kondrates, A.M.
Dorchester, Massachusetts

Robert H. Noonan
Northridge, California

Mrs. Rosemary Keupper Valle
San Francisco, California

Anthony A. Walsh, M.S.
Durham, New Hampshire

Alan Jay Yesner
Coral Gables, Florida

632 AMERICAN ASSOCIATION FOR THE HISTORY OF MEDICINE
 AMERICAN ASSOCIATION FOR THE HISTORY OF MEDICINE, INC.
 FINANCIAL REPORT 1971/1972

	NUMBER OF MEMBERS		
	1 November 1971	31 October 1972	Net Change
Active Members	769	813	44
Non-Resident Members	28	28	—
Constituent Societies	23	22	(1)
Honorary Members	6	7	1
TOTALS:	<u>826</u>	<u>870</u>	<u>44</u>

Summary:

93 new active members
 2 new non-resident members
 1 new honorary member
 14 resignations
 7 deceased members
 34 cancellations for non-payment of dues
 (includes 1 Constituent Society and 2 non-resident members).

Certified Correct:

John B. Blake, *President*

Genevieve Miller, *Secretary-Treasurer*

AMERICAN ASSOCIATION FOR THE HISTORY OF MEDICINE, INC.
 PROPOSED BUDGET 1973/1974

RECEIPTS

Membership dues (900)	\$13,500.00
Sale of address list	200.00
Annual Meeting	4,000.00
Interest on Savings Accounts	500.00
	<u>\$18,200.00</u>

EXPENDITURES

Subscriptions to <i>Bulletin</i> (900)	9,000.00
Administration	2,000.00
Annual Meeting	4,000.00
Honors and Awards	
Garrison Lecture—\$500 (including expenses)	\$ 1,000.00
Osler Medal—\$200 (including expenses)	400.00
Welch Medal	50.00
	<u>1,450.00</u>
Publication fund	1,500.00
Miscellaneous	250.00
	<u>\$18,200.00</u>

MEDICO-HISTORICAL NEWS AND ACTIVITIES

JOHNS HOPKINS CENTENARY

December 24, 1973, marks the one-hundredth anniversary of the death of Mr. Johns Hopkins, Quaker merchant and philanthropist of Baltimore, and founder of the university and hospital which bear his name. The anniversary was commemorated by numerous editorials in the press and by simple graveside ceremonies in Baltimore's Green Mount Cemetery, attended by officials of the Johns Hopkins University and the city of Baltimore.

There has always been speculation about the source of Mr. Hopkins' idea of founding a university associated with a teaching hospital—an idea unusual in the United States in his time. In a letter of instructions to the trustees, March 10, 1873, Mr. Hopkins clearly expressed his "wish and purpose that the institution [the hospital] . . . form a part of the medical school." John C. French, in an article in this *Bulletin* (1952, 27: 562-566) suggested that one source of influence may have been Dr. Patrick Macaulay, a graduate of the medical school of the University of Pennsylvania where he had been a student of Benjamin Rush. It is more than possible that Mr. Hopkins and Dr. Macaulay were personally acquainted. They were contemporaries, born only three years apart, and both men were prominent Baltimore citizens who served on the board of trustees of the Baltimore and Ohio Railroad. Mr. Hopkins attended Quaker meeting, as did Mrs. Macaulay. Mr. Hopkins, an avid reader, may well have been acquainted with a publication of Dr. Macaulay's. This was an address given before the Medical & Chirurgical Faculty of Maryland in 1823 entitled "Medical Improvement," which came out in pamphlet form the following year. Its sets forth many suggestions for improving American medical education, among them the necessity of a hospital as part of a medical school, and notes the importance given in Europe to study in the hospital.

Personal memorabilia of Johns Hopkins are scanty, but of interest among them is a small collection of medical and scientific books. The volumes, 40 in number, were the first items entered in the library accessions record of the Johns Hopkins Hospital and include titles by Rush, Dunglison, Liebig, Erasmus Darwin, Combe, Tissot, Lavater, and Magendie. These books furnish a tangible link between Mr. Hopkins and Dr. Macaulay, for they came from Macaulay's library and contain his bookplate. It is an interesting plate which includes the name of his country house, Mondawmin, with the motto "Being and To Be," and stalks of tasseled corn (Mondawmin was said to be the local Indian word for corn. The poet Longfellow, a visitor at Mondawmin, suggested it as an appropriate name for the estate—a shopping center now occupies the land).

Macaulay predeceased Mr. Hopkins, dying in 1849. The following year his estate was sold at auction. A catalog of this auction is preserved in the Maryland Historical Society. It lists the sale items and their purchasers and notes that the library of some 500 volumes was purchased by Mr. Johns Hopkins. The books later came to the Johns Hopkins Hospital as part of Mr. Hopkins' bequest. They are now a prized part of the library of the Johns Hopkins Institute of the History of Medicine and

will no doubt be displayed, along with other university memorabilia, when the Johns Hopkins University celebrates its centennial in 1976.

JANET B. KOUDELKA

ANNOUNCEMENTS

Boston University

The Boston University School of Medicine has created a Section on the History of Medicine within the Department of Socio-Medical Sciences. G. Edmund Gifford, Jr., M.D., has been appointed Chairman of the Section and Associate Professor of the History of Medicine. Also appointed Associate Professor is Judith Swazey, Ph.D. Other members of the Section are: John J. Byrne, M.D., Professor of Surgery; Otto Marx, M.D., Professor of Psychiatry; Edward Pelikin, M.D., Professor of Pharmacology; and J. Worth Estes, M.D., Associate Professor of Pharmacology.

International College of Surgeons

On February 19, 1974, Allen G. Debus, Professor of the History of Science and Director, Morris Fishbein Center for the Study of the History of Science and Medicine, University of Chicago, will deliver the fourth lecture of the 18th Series of Lectures on "The Pharmaceutical Revolution of the Renaissance" (The Clark R. Walgreen Jr. Lecture).

Josiah Macy, Jr. Foundation

The Macy Foundation and the National Library of Medicine will commemorate jointly the Bicentennial of Medicine in the United States in 1976 by publishing a commemorative volume. Medical scientists and educators of international prestige have been invited to prepare essays on developments in selected fields, with special emphasis on the last century. Publication of the volume, which will be edited by John Z. Bowers and Elizabeth F. Purcell, is scheduled for January 1, 1976. The papers will form the basis for a conference to be held at the National Library of Medicine in 1976.

Loma Linda University

The third annual William Frederick Norwood Lecture on the History of Medicine will be given on March 13, 1974, by John Duffy, Ph.D., Priscilla Alden Burke Professor of History, University of Maryland. Professor Duffy will speak on "Plagues and Pestilences in America."

Rockefeller Foundation

In response to increasing requests from scholars for access to its archives, the Rockefeller Foundation has announced that records prior to 1942 are now being processed and will be made available for research. At present research in these files

is possible when inquiries are sufficiently specific and existing indices make access possible. A pamphlet describing the materials in the Foundation Archives which are now open can be had from The Rockefeller Foundation Archives, 333 W. 52nd St., New York, N.Y. 10019.

Smithsonian Institution

On October 21, 1974, the National Museum of History and Technology opened an exhibit entitled "Triumph over Disability" which will be on display until October 1975. Sponsored by the Museum and the American Congress of Rehabilitation Medicine, the exhibit surveys two hundred years of physical medicine in the United States. A catalog has been prepared by the director of the exhibit, Dr. Audrey B. Davis. It can be obtained at a cost of \$2.50 from the National Museum of History and Technology, Division of Medical Sciences, Room 5000, Washington, D.C. 20560.

University of Chicago

The Morris Fishbein Center for the Study of the History of Science and Medicine presented Dr. Lloyd G. Stevenson, Director of the Johns Hopkins Institute of the History of Medicine, in a lecture and two seminars. On November 27, 1973, Dr. Stevenson spoke on "The Responsible Medical Student: Medical Education in the Early Nineteenth Century." The seminars on November 28 and 30 concerned "Psychohistory: Is It a Reliable Tool?" and "The Concept of Disease."

University of Illinois

The 31st annual D. J. Davis Lecture in Medical History will be given on April 22, 1974, by William K. Beatty, Librarian of the Northwestern University Medical School. The lecture will take place in conjunction with ceremonies marking the dedication of the new Library of the Health Sciences of the University of Illinois at the Medical Center. Other speakers will be Estelle Brodman, Librarian at Washington University School of Medicine, and Alexander M. Cain, Assistant Keeper, National Library of Scotland.

Appointment

In connection with its joint program with the University of Pennsylvania in the History of Science, Bryn Mawr College announces the appointment of Jane M. Oppenheimer, Class of 1897 Professor of Biology, as 1897 Professor of the History of Science, effective in the academic year 1974-75. During the calendar year 1974, Dr. Oppenheimer will be Visiting Professor of the History of Medicine at Hebrew University in Jerusalem.

PROGRAMS OF MEETINGS

College of Physicians of Philadelphia, Section on Medical History

November 26, 1973: "Early American Baby Rattles—A Pediatric Viewpoint," George S. Sturtz; "Postgraduate Medicine: The Past and Now," Jerome J. Harris.

January 7, 1974: "Puerperal Fever and 19th Century Contagiousness. The Obstetricians' Dilemma," J. Wistar Meigs; "John Davidson Godman (1794-1830)," Stephanie Morris.

George W. Corner History of Medicine Society, Rochester, N.Y.

November 20, 1973: "Life, Death and Health in Medieval Times," Susan Stuard.

December 13, 1973: "Medical Education in Tropical Africa," Harry Segal.

Handerson Medical History Society, Cleveland, Ohio

November 12, 1973: "In Praise of Amateurs: Medical History Before Garrison," Genevieve Miller.

Mayo Foundation History of Medicine Society, Rochester, Minn.

January 9, 1974: "Henry S. Plummer, 1874-1936," Samuel F. Haines; "Death as an Expression of Functional Disease," Raymond D. Pruitt.

Society of Medical History of Chicago

November 28, 1973: "High on Hygiene: Preventive Medicine as a Popular Crusade," Lloyd G. Stevenson.

University of Virginia Medical History Society, Charlottesville, Va.

November 29, 1973: "Origins of Prophylactic Surgical Antisepsis, Recent Historic Findings," Owen H. Wangensteen.

Washington Society for the History of Medicine, Washington, D.C.

November 15, 1973: "The Lousy Adventure of Fred L. Soper, 1943-1944," J. Austin Kerr; "American Medical Science and the Introduction of the Microscope, 1830-1860," James H. Cassidy.

William Snow Miller Medical History Seminar, University of Wisconsin, Madison

January 23, 1974: "Pre-Columbian Medicine in Venezuela," Ekkehard Kleiss.

BOOK REVIEWS

ALLEN G. DEBUS (Editor). *Science, Medicine and Society in the Renaissance*. Essays to honor Walter Pagel. New York: Neale Watson Academic Publications, 1972. 2 vols., 275 and 338 pp. Ill. \$50.

Few readers of the *Bulletin of the History of Medicine* will be surprised to learn that it has taken two volumes to accommodate all those who wished to contribute to a Festschrift in honor of Walter Pagel. The thirty-nine contributors include many noted European and American historians of medicine, science and culture; and the editor and publisher are to be congratulated for including a refreshing number of essays by younger scholars, which testify to the continuing vitality and inspiration of Pagel's ideas. Professor Allen G. Debus, who undertook the substantial task of editing the two volumes, provides an introduction which sketches Dr. Pagel's life and assesses the significance of his work against the background of professional developments in the history of medicine and science in the 20th century. Marianne Winder of the Wellcome Institute, London, is responsible for a comprehensive bibliography of Pagel's extensive publications in both medical science and the history of medicine, which includes, one is happy to report, a number of articles in preparation. The contents of the two volumes contain abundant evidence of the widespread and profound influence of this much revered scholar. Collectively they enhance our growing awareness of the diversity of philosophical ideas, technical accomplishments, religious motivations and cultural traditions which contributed to the evolution of science and medicine at a critical stage of development in early modern Europe. It has been one of Walter Pagel's major accomplishments to have persuaded many historians of medicine and science of the necessity of confronting seriously the complex interaction of these various factors by his precept and example. To a remarkable degree the contributors to the Festschrift write on subjects which are peculiarly "Pagelian": Paracelsus and chemical medicine; William Harvey; and the influence of the gnostic, Hermetic and neo-Platonic traditions in the scientific revolution.

Paracelsus and chemical medicine are discussed in some ten papers. Leo Norpoth studies Paracelsus in relation to the Mannerist movement in literature and art, while Kurt Goldammer, the noted historian of religion, offers new evidence of links between the theology of Paracelsus and Osiander. Fridolf Kudlein re-examines Paracelsus' antisemitism in the context of sixteenth-century attitudes. The interaction of chemical therapeutics with Galenic physiology and pathology is the subject of an important contribution from Allen Debus. He points up the complexity of the Paracelsian-Galenist debate and examines the search for a chemical compromise in the works of Guinther of Andernach, Andreas Libavius and Daniel Sennert. Wolfgang Schneider, drawing on the extensive research of his Seminar on the History of Pharmacy at Braunschweig reiterates his plea for distinguishing between chemiatry (the preparation of chemical medicaments) and iatrochemistry (the medical system associated with Francis de le Boë Sylvius). The history of Paracelsianism in France is well served by the essays of two distinguished historians, Henry Guerlac and



Dr. and Mrs. Walter Pagel with Prof. Allen G. Debus

Hugh Trevor-Roper. The latter, in a skillful piece of historical detective work, unravels a long-standing confusion about the identity of two early French disciples of Paracelsus, Roch le Baillif and Jean Ribit, and provides much detailed information on their political and religious contacts. Guerlac studies later developments in the work and activity of Guy de la Brosse, instrumental in founding the *Jardin Royal des Plantes* where the teaching of chemical therapeutics found an institutional base in Paris with important consequences for the development of French chemistry. Together, these articles are indispensable for further studies of the French movement. Other national episodes are discussed by W. Hubicki for Poland; F. N. L. Poynter for England in an examination of two rare tracts of Nicolas Culpeper; and R. S. Wilkinson describes how John Winthrop, Jr., brought chemical therapy to the New World.

Of the papers dealing with Harvey and his influence, two stand out. Jerome J. Bylebyl returns to a favorite Pagel topic, the relationship between Cesalpino and Harvey. In a finely argued paper Bylebyl compares Cesalpino's ideas on the movement of blood in the gastric and mesenteric vessels with those of Harvey. While the comparison greatly strengthens the circumstantial case for Harvey's familiarity with Cesalpino's works, the author eschews the obvious and easy conclusion to

redefine more nicely the differences in concepts and method of the two. The other notable contribution in this area is a joint effort by Charles B. Schmitt and Charles Webster who whet our appetite for more information on the fascinating Neapolitan physician and surgeon, Marco Aurelio Severino (1580-1656), who integrated Harvey's views into his studies of comparative physiology and anatomy. Karl E. Rothschuh concentrates on the quantitative aspects of blood flow in antiquity and in the sixteenth and seventeenth centuries, while Richard Toellner contrasts the rôle of reason and experiment in Descartes and Harvey. Erna Lesky does double honour to Pagel by discussing the Viennese professor of medicine Paul de Sorbait (1624-1691), who attacked the Paracelsians and defended Harvey. Audrey B. Davis examines the confluence of chemistry and anatomy in the physiological studies of the blood by Willis and Glisson.

Two articles on seemingly disparate topics by Owsei Temkin and Peter Niebyl in fact complement each other most effectively. Temkin, in drawing our attention to the subtle but significant distinctions in explanations offered by Joubert, Fernel and Erastus on the action of specific cathartic drugs, points out the extent to which a real development of ideas was possible within the boundaries of orthodox sixteenth-century Galenism. This article also anticipates further study of the concepts of irritation and irritability. Niebyl's paper on the other hand illustrates the transformation of a Galenic idea in a revolutionary setting with reference to Van Helmont's wholesale generalization of Galen's particular stricture against blood-letting at the time of "crisis." Galen's concept of blood-letting is also the subject of a long article by Rudolph E. Siegel.

The type of contextual history which Pagel espouses has had no less an impact on the history of science. Even the erstwhile champions of empiricism and rationalism in the scientific revolution, Bacon and Newton, have undergone major re-evaluations in the light of the new historiography which has thrown into prominence the magical and Hermetic strains of seventeenth-century thought. Bacon is the subject of two contributions from England. D. P. Walker, an expert on the sixteenth and seventeenth century pneumatology, discusses the rôle of "spirits" in Bacon's natural philosophy and its relation to the Telesian school of "spiritual" philosophy. The ethical and religious framework of Bacon's *Great Instauration* is examined in some detail by Jerome Ravetz who tentatively suggests some Paracelsian inspiration here. Paolo Rossi, who has done so much to illuminate Bacon's relationship to the Renaissance magical tradition, takes this occasion to explore the impact of the idea of the plurality of worlds in seventeenth-century conceptions of the relationship of man, nature and God. Perhaps no subject has created as much stir amongst historians of science in recent years as the "mystical" face of Newton. Two papers address themselves to this topic: one might fairly have been anticipated; the other is sure to raise some eyebrows. P. M. Rattansi, a long-time advocate of the "Hermetic" Newton and a co-author with Pagel on some papers, offers an assessment of Newton's alchemical studies in which he emphasizes two aspects. Firstly, Newton's fascination with the Hermetic idea of a *prisca sapientia* which led him to a study of mythographic tradition of alchemy (the subject, incidentally, of a paper by H. J. Sheppard in Volume I of the *Festschrift*); and secondly the influence that alchemical "spirits" played in Newton's "aetherial" speculations on light and gravity,

mediated in part by the Cambridge neo-platonists. Richard S. Westfall, the author of a recent prize-winning book on force in Newton's physics and not previously suspected of being a secret adept, takes Rattansi's cautious hints and develops the daring thesis that Hermetic ideas lurk in recesses of many a seventeenth-century mechanical philosophy and that they are a crucial element in the evolution of Newton's concept of force. This paper will certainly evoke much comment. More sober Newtonian scholarship is represented by I. B. Cohen, whose paper on Newton and Keplerian inertia draws on his incomparable knowledge of the *Principia* in its various editions. Unfortunately his contribution has been ill-served by some careless type-setting which plays havoc with one of his paragraphs: printing errors are too common in these volumes, but they are mostly minor.

Other papers which will be of interest to the readers of the *Bulletin* but which do not readily fall into any of the above groupings include A. G. Keller on mathematical technologies and the idea of technical progress in the sixteenth century; D. C. Lindberg and Nicholas H. Steneck on the sense of vision and the development of observational science. The late C. D. O'Malley contributed a paper on the sixteenth-century Valencian anatomist Pedro Jimeno; and Saul Jarcho has written on a consultation of the Portuguese physician Roderigo de Fonseca. Jerry Stannard once again exhibits his extensive knowledge of the history of botany and *materia medica* in a study of botanical nomenclature in an early sixteenth-century *Feldtbuch*. Walther Riese offers a brief discussion of symbolic thought in Cartesianism; Robert P. Multhauf a substantial article on Becher and Stahl's attempts to unravel the composition of saltpeter; and Carlo Castellani closes the set with a comparison of the generation concepts of Bonnet and Buffon. Three more exotic contributions remain: Paul F. Craneffeld on how the opprobrium toward the ancient Boeotians was transferred to the Dutch; Otto Kurz on a Mexican amulet against kidney stones; and Joseph Needham on a Chinese alchemical manuscript of uncertain date which shows remarkable prescience about the rôle of air in combustion (a *prisca sinologia* perhaps?).

Not all of the above papers are of course of equivalent stature. But this Festschrift succeeds in being more than a monument to a great scholar erected by his admirers and friends. Future generations of historians will dip into it and gain a sense of the ferment which Walter Pagel excited in a generation of scholars. In his introduction Allen Debus reminds us of a paper of Pagel's which served as an *apologia pro vita sua* in the days when he was not so well known, entitled "The Vindication of 'Rubbish'." Let's hope he has enjoyed the recycled product!

Reviewed by OWEN HANNAWAY, Ph.D., Assistant Professor of the History of Science, The Johns Hopkins University, Baltimore, Md.

JOHN H. TALBOTT. *A Biographical History of Medicine*. Excerpts and Essays on the Men and Their Work. New York: Grune & Stratton, 1970. 1211 pp. Ill. \$60.00.

Medical history as biography or autobiography has long been a popular mode. Doctors, along with generals and statesmen, seem to have the inclination to both

read and write memoirs. Much can be learned by reading such works and for many, it "brings to life" a long-dead hero and a distant time far more effectively than a book aimed strictly at the history of ideas. The biographical approach to history must surely appeal to Dr. John Talbott, formerly Professor of Medicine at the University of Buffalo and more recently editor of the *JAMA*, for his has been the most prodigious task since Drs. Kelly and Burrage compiled their biographical dictionary.

Talbott first published these 620 or so sketches in the *JAMA* over the course of a decade. They range from the earliest known figures, such as Hammurabi and Asklepios (but not Imhotep), to many physicians who lived and worked in the twentieth century. Only Eugene Opie was a living biographee at the time of publication. For the centuries prior to about the mid-eighteenth, the sketches are arranged according to date of birth. Thereafter, they appear in clusters according to specialized areas of work. The absence of a familiar name is quite rare, but some notable omissions do exist: Alexis Carrel, John J. Abel, Franklin P. Mall, and Ludwig Helmholtz are a few who contributed much but here are conspicuous by their absence. But then who of us could have come close to Dr. Talbott's achievement?

Each entry is accompanied by a photograph or a composite drawing by Gabriel Bako. The drawings are generally very fine likenesses of their subjects, yet they give to the book a somewhat strange flavor of not quite serious history. In numerous cases where drawings were used, good photographs do exist. The representation of ancient figures is pretty much guesswork anyway, so why include them? The excellent subject and name index make this an easy book to use. The short bibliography attached to each sketch will prove very useful to all readers.

To point out errors, which in an undertaking of this magnitude are bound to crop up, seems egregious. One comment regarding the essays generally does seem important to me. Since this is not a biographical dictionary in the usual sense and since excerpts from the biographees' writings appear frequently, the key problem of the historian, namely interpretation, raises its head. Dr. Talbott has not always kept up with new interpretations or new findings regarding old ones. Nor, indeed, does he make that claim. James Cook, who along with Leonardo and Erasmus, is one of the few nonmedical men to rate a sketch, is portrayed in relation to the problems of scurvy. Yet no mention is made of Christopher Lloyd's interpretation that Cook's influence probably led to a retardation of the widespread adoption of lemons by the British Navy. Another such example occurs in the sketch of William H. Welch. Reading it one might come away with the idea that Welch was a very productive scientist. Donald Fleming's book, which has always lived in the shadow of the Flexners' superb biography, is unfortunately not cited. Yet Fleming's book is not only extremely readable, as we like to say, but is a gold mine of ideas and interpretations. Welch's importance as an "Influential" rather than as a scientist must be considered.

All this is not to detract from the overall usefulness of this magnificent collection of biographical information and references. We at Duke University are the fortunate

recipients of Dr. Talbott's working papers for this book. We have thus inherited many feet of reprints, xerox reproductions, and bibliographies, all neatly filed by biographical subject. This book then, judging from reading it and looking at the notes in the files, is a fine collection of articles, carefully researched and written. It is an accomplishment of which Dr. Talbott and his publisher might well be proud. Certainly, no medical library can afford to be without it.

Reviewed by GERT H. BRIEGER, M.D., M.P.H., Ph.D., Associate Professor of Medical History, Duke University Medical Center, Durham, N.C.

DAVID R. ZIMMERMAN. *Rh: the Intimate History of a Disease and Its Conquest*. With an Introduction by J. D. Watson. New York: Macmillan Publ. Co., 1973. xviii + 371 pp. Ill. \$8.95.

Mr. Zimmerman has in this book given an extraordinarily lifelike picture of the people, the organizations and the problems involved in the history that led from the discovery of the Rhesus blood groups through the definition of the infant disease *Erythroblastosis foetalis* associated with them, to the final stage of the prevention of the disease, which had caused the death or mental disablement of many Rhesus positive babies born to Rhesus negative mothers. Like Mr. Zimmerman, I have worked in and around this field for many years, both in Britain and America, and I read through his book with a sense of amazement that anyone could know so much about it; it was like finding that someone had published one's family album. Those who had been involved in the work on D.N.A. which was the subject of J. D. Watson's *The Double Helix* must have felt the same.

It is true, too, as Mr. Zimmerman points out in great detail, that this work has been criss-crossed with priority disputes, beginning with that between Dr. Wiener and Dr. Levine over the discovery of the Rhesus groups, and later by the controversy over the Rhesus nomenclature. Mr. Zimmerman says that he feels it to be of the utmost importance to be sure who really should be given the priority in these disputes, as this is the reward on earth of all scientific endeavour. "The commonweal," he says, (p. 305) "depends on the accumulation of praiseworthy medical research, and if those who perform it do not receive appropriate recognition and praise, the best men of a generation will turn to other endeavors." His history is a kind of index of first lines in which the winners score. But the historical connections of the dispute about the Rhesus terminology are more interesting than that. Dr. Wiener's claim that the Rhesus factors are inherited as a single unit, rather than as multiple separate genes, is not so much an embarrassing personal quarrel as a methodological preference, which may be traced back to Karl Landsteiner's claim that there was an underlying unity among antibodies, against Paul Ehrlich's pluralistic hypothesis. It would have been most interesting to know whether Dr. Wiener's young protégé also showed this preference for a unifying explanation in his thinking.

But that is not what Mr. Zimmerman wants to write about; he has written a very intimately observed book in a lively journalistic manner, about the people,

their relationships and their efforts to get recognition and support, an epic with heroes, rather than about ideas. It is extraordinarily lifelike. J. D. Watson has started a trend: let us accord him the priority.

Reviewed by PAULINE M. H. MAZUMDAR, M.B., M.Tech., Macy Fellow in the History of Medicine and the Biological Sciences, Johns Hopkins Institute of the History of Medicine, Baltimore, Md.

JOHN K. WOLF [Editor and Compiler]. *The Classical Brain Stem Syndromes: Translations of the Original Papers with Notes on the Evolution of Clinical Neuroanatomy*, Springfield, Ill.: C. C Thomas, 1971, xvi+166 pp. Ill. \$9.50.

Regretfully, eponymous titles are gradually dropping out of medical parlance. Some, however, seem likely to persist on account of their convenience, and of these the proper names associated with the various brain stem syndromes are prime examples. But if the discoverers' names are to be employed we must be certain that they are applied only to the conditions described by them. The benefit of having a book containing translations of the original accounts is, therefore, obvious enough.

Dr. Wolf has selected the syndromes of Millard-Gubler, Foville, Weber, Jackson, Parinaud, Benedikt, Wallenberg, Raymond, and of Koerber-Salus-Elschnig and has made translations where necessary of their original descriptions, with brief introductions. Although the translations are accurate enough, the author has taken frequent liberties with the original texts without notifying the reader and many may object to Hughlings Jackson's and Weber's spelling being Americanized. In the introductions the author reveals defects of both historical appreciation and knowledge of the history of neuro-anatomy, neuro-physiology, and clinical neurology. What were Morgani's concepts of cerebral localization? Where is ". . . the London Hospital, on Queen's Square"? Did the French school of neurology come to a standstill with Raymond? There are, in fact, very few references to the momentous advances being made in the neurological sciences during the period of 1885 to 1910 covered by these clinical reports. And yet the book's sub-title states ". . . Notes on the Evolution of Clinical Neuro-anatomy." We are told little of the clinicians concerned and not even their dates are provided. Moreover, associated contributors such as E. V. von Leyden (1832-1910) whose name is often associated with Weber's syndrome and Sir Stephen MacKenzie's (1844-1909) with Jackson's are not referred to. Sometimes an equally important description of a syndrome by the individual concerned has not been mentioned. Nor does the author refer to Jackson's, "On a case of paralysis of the tongue from haemorrhage in the medulla oblongata," 1872, *Lancet*, ii:770-773, which is a continuation of the earlier account. There are numerous factual, bibliographical, and typographical errors and the author's literary style leaves much to be desired. There is no index.

The phenomenon of the compulsive brain stem syndrome seekers, with their duplications and recording of irrelevant details, is a most interesting episode in the history of clinical neurology. The activity seemed to provide its devotees with an intellectual exercise but it nevertheless contributed to the advancement of medicine.

The details of it and the precise role it played in clinical neurology, and the influence on it of anatomy, physiology, and pathological anatomy has yet to be studied in depth.

Reviewed by EDWIN CLARKE, M.D., Director, The Wellcome Institute for the History of Medicine, London, England.

RICHARD W. SCHWARZ. *John Harvey Kellogg, M.D.* Nashville, Tenn.: Southern Publishing Association, 1970. 256 pp. Ill. \$5.95.

With the possible exception of Sylvester Graham, John Harvey Kellogg was probably America's most influential health reformer. His writings alone touched the lives of millions. During his long and active career (1852-1943) he not only edited the hygienic journal with the largest circulation in America, but authored nearly fifty books, including the best-selling *Plain Facts About Sexual Life* (500,000 copies). In addition, he directed the huge Battle Creek Sanitarium, founded a medical school, organized a eugenics society, and invented a host of "health foods" (e.g., peanut butter and flaked cereals) that, among other things, changed the breakfast habits of virtually the entire nation.

Schwarz's fascinating biography, originally written as a University of Michigan doctoral thesis, rests solidly on the unpublished Kellogg papers now housed at East Lansing and Ann Arbor. But unfortunately the publishers chose to omit all documentation, and interested readers are simply directed to the dissertation. This is indeed regrettable, for it significantly reduces the value of a basically sound book.

Schwarz is, however, somewhat uncritical of his subject. Perhaps because of the nature of his sources, he tends to see Kellogg much as the doctor saw himself: as an internationally respected surgeon and health authority. While it is true that Kellogg had a large and loyal following, his reputation in the medical profession was not untarnished. This stemmed partially from his enthusiasm for vegetarianism and hydropathy, but it had deeper roots as well. As Abraham Flexner observed in his 1910 report on *Medical Education in the United States and Canada* (not cited by Schwarz), Kellogg's American Medical Missionary College was devoid of "a critical and investigative spirit." At times the same could be said of Kellogg's mind.

Schwarz also tiptoes carefully around the crucial break between Kellogg and the Seventh-day Adventists in 1907, when the now-famous reformer was "disfellowshipped" on questionable charges of heresy. (The book is published by an Adventist press.) His dismissal is not without significance for the history of American medical education. Deprived of Kellogg and his medical institutions, the church fathers established a religiously orthodox school in southern California, which continues today as the Loma Linda University School of Medicine.

Reviewed by RONALD L. NUMBERS, Ph.D., Assistant Professor of Humanities, Loma Linda University, and 1973-74 Macy Fellow in the History of Medicine and Biological Sciences at the Johns Hopkins Institute of the History of Medicine, Baltimore, Md.

THE BULLETIN RECENTLY RECEIVED *

- Blas Aznar. *Personalidad biológica de Azorín*. Salamanca, 1973 (Cuadernos de Historia de la Medicina Española, Monografías, 23). 73 pp. Ill.
- M. Cordero del Campillo, C. Ruiz Martínez, B. Madariaga de la Campa (Editors). *Semblanzas Veterinarias*. Vol. 1. Léon (Spain), 1973. 410 pp. Ill.
- Margene O. Faddis. *A School of Nursing Comes of Age*. A History of the Frances Payne Bolton School of Nursing, Case Western Reserve University. Cleveland: The Alumni Association of the Frances Payne Bolton School of Nursing, 1973. xiii+377 pp. Ill.
- Sami K. Hamarneh. *Origins of Pharmacy and Therapy in the Near East*. Tokyo, 1973 (The Naito Foundation, English Publications, Ser. 1, No. 2). xiii+176 pp. Ill.
- John H. Herman. *Urology: a View through the Retroscope*. Hagerstown, Md.: Harper & Row, 1973. x+182 pp. Ill. \$7.95.
- S. V. Humphries. *The Life of Hamilton Bailey: Surgeon, Author and Teacher of Surgery*. Elmsford, N.Y.: British Book Centre, 1973. xiii+72 pp. Ill.
- O. P. Jaggi. *Folk Medicine*. Delhi: Atma Ram & Sons, 1973 (History of Science and Technology in India, vol. 3), xxxii+228 pp. Ill. Rs. 60; \$12.00.
- . *Indian System of Medicine*. Delhi: Atma Ram & Sons, 1973 (History of Science and Technology in India, vol. 4). 260 pp. Ill. Rs. \$80; \$16.00.
- . *Yogic and Tantric Medicine*. Delhi: Atma Ram & Sons, 1973 (History of Science and Technology in India, vol. 5. xvi+176 pp. Ill. Rs. 60; \$12.00.
- H. Karplus (Editor). *International Symposium on Society, Medicine and Law, Jerusalem, March 1972*. Amsterdam-London-New York: Elsevier Scientific Publishing Co., 1973. x+204 pp. Ill. \$11.75.
- National Library of Medicine. *Bibliography of the History of Medicine*. No. 7, 1971. Washington: National Library of Medicine, 1973. vi+263 pp. \$3.00.
- New York. Mayor's Committee on Marihuana. *The Marihuana Problem in the City of New York*. Reprint of the 1944 edition. Metuchen, N.J.: Scarecrow Reprint Corp., 1973 (New York Academy of Medicine, History of Medicine Series, 38). xii+xii+220 pp. \$7.50.
- B. G. Ziedses des Plantes. *Selected Works*. Amsterdam: Excerpta Medica; New York: American Elsevier Publishing Co., 1973. 207 pp. Ill. \$23.00 (paperbound).

* The *Bulletin* reserves freedom of decision as to the publications to be listed in this section. Items received, other than those assigned for review, are ultimately incorporated into the collection of the Institute of the History of Medicine.

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Beginning with the forty-eighth volume (1974) the *Bulletin of the History of Medicine* will be a quarterly rather than a bimonthly. It is the hope of the publishers and editors that the number of pages per annual volume, far from being reduced, will actually be increased. Only minor changes in the format and design are planned. When the *Bulletin* takes on the figure which has long been characteristic of most learned journals, it is likely that the most striking change will be that every number will be distinctly thicker than any number has ever been before.

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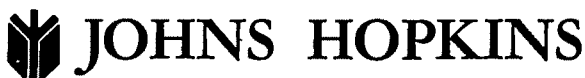
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